SCIENCE

HITCHCOCK'S

WOOD WORKING DIGEST

for management men in woodworking

50 CENTS • OCTOBER • 1961

Serial Dept.
OCT 9 1961

WOOD INDUSTRY

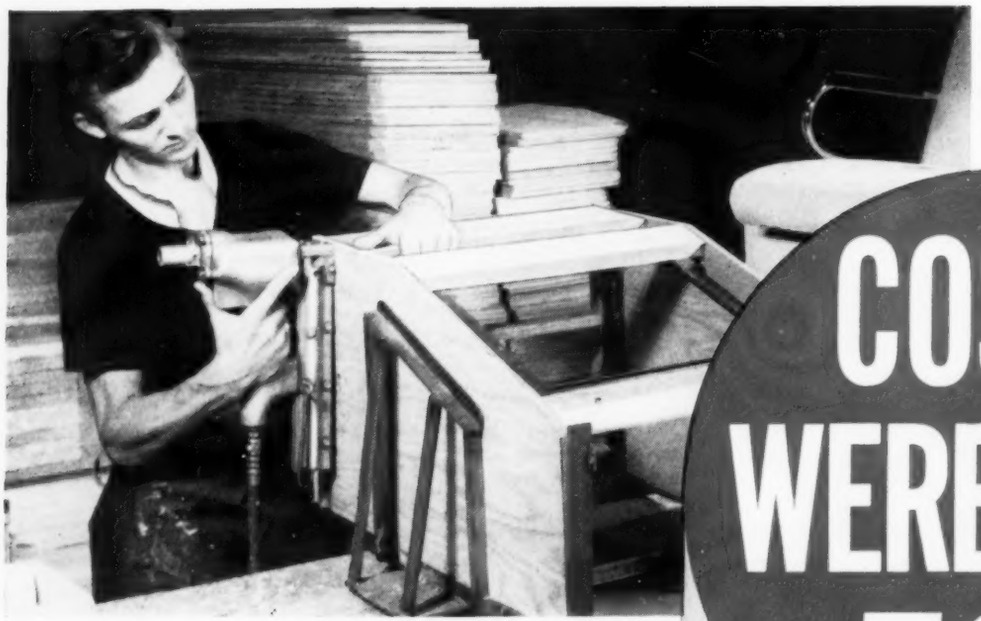
fore cast

New Developments In The Flush Door Industry

Coated Abrasive Knowledge—Part II

The Romance Of Wood

Plywood Specialties Increase Production, Sales Potential



FURNITURE FRAMES
Chair frame stock is put in a jig and 1½" DC Spotstaples are countersunk for a strong, smooth joint.

COSTS WERE CUT 50%

Rayette Co., St. Paul, Minnesota

A Leading Manufacturer of a Beauty Salon Line

"The Rayette Company improved production when we revamped our assembly line with new jigs and switched from hand nailing to automatic nailers," says William L. Ganschinietz, plant manager.

"All frame members are Douglas Fir plywood and hackberry. Hackberry is one of the hardest woods I've ever seen," says Earl Melsby, foreman of furniture assembly, "but the Spotnailer drives beautifully with a touch of the trigger. There is no problem with splitting, as with hand nailing, and no pre-drilling needed. When we were trying to hand nail hackberry with hammer and nails, all the crews complained and production was down."

"Rayette uses staples instead of nails because of the extra holding power," Ganschinietz said. "The heavy duty DC staples used penetrate easily using standard air pressure."

"Fortunately," Earl Melsby said, "I not only reduced assembly costs 50 per cent but I actually improved quality using these pneumatic staple guns. Since the tools are portable, we have no problem in adapting the guns when a chair model is changed. The way these sturdy guns stand up, we expect to get many years of service even though, like most of our new labor-savers, they paid for themselves the first month we used them."

This is a typical Spotnails saving story—write or phone today, find out how Spotnails, Inc. can save you time, make you money.

FREE CATALOG
containing the complete Spotnails line is available on request.

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Branch Plants: **Clark, New Jersey • Los Angeles, California**

CHAIR ARMS
Are prefabricated in seconds with Spotstaplers.

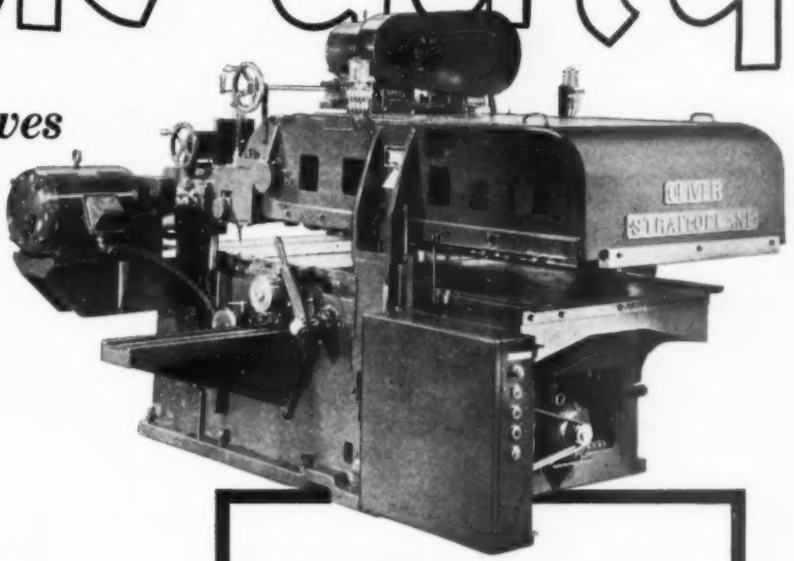
SPRING CLIPS
Are automatically spaced as they are stapled to the frame using the metal jig shown. The Spotstapler used has a built-in magnet that holds spring clip in position.

SPRING CLIPS
Are bent over the furniture spring and Spotstapled to lock the spring in place with a touch of the trigger.

CORNER BLOCKS
Are drawn up tight by DC Spotstaples or Spotnails for a perfect glue bond.

double duty

single machine removes warp or wind from lumber - planes both sides smooth and parallel



OLIVER STRAITOPLANE

eliminates splitting, saves lumber

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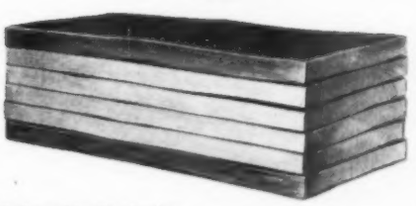
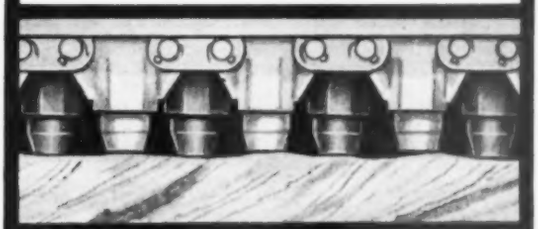
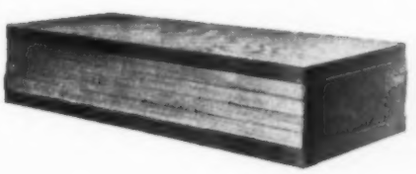


Before Straitoplaning



Most feeding problems eliminated with newly-designed feeding system



After Straitoplaning

Oliver

WOODWORKING DIVISION

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If you bond with contact cements or adhesives this **BLACK BROTHERS** *combination offers higher speeds, lower costs, better bonds*

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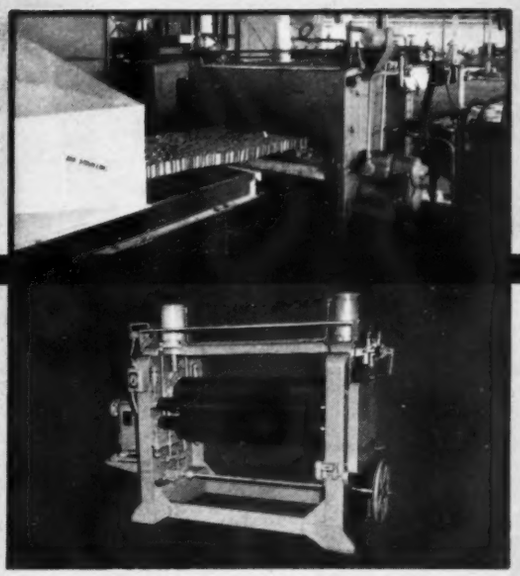

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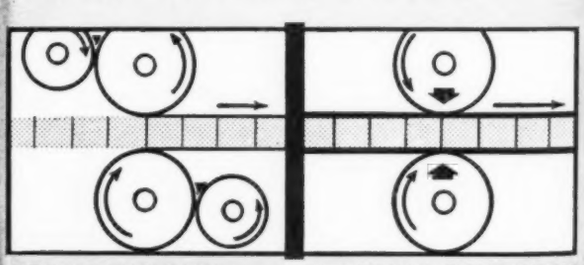

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This Black Brothers combination brings you the speed and economy of automation . . . a new, unmatched control of quality . . . yet provides the flexibility necessary to integrate the equipment into your present production line. Ideal used in combination, *or* individually.

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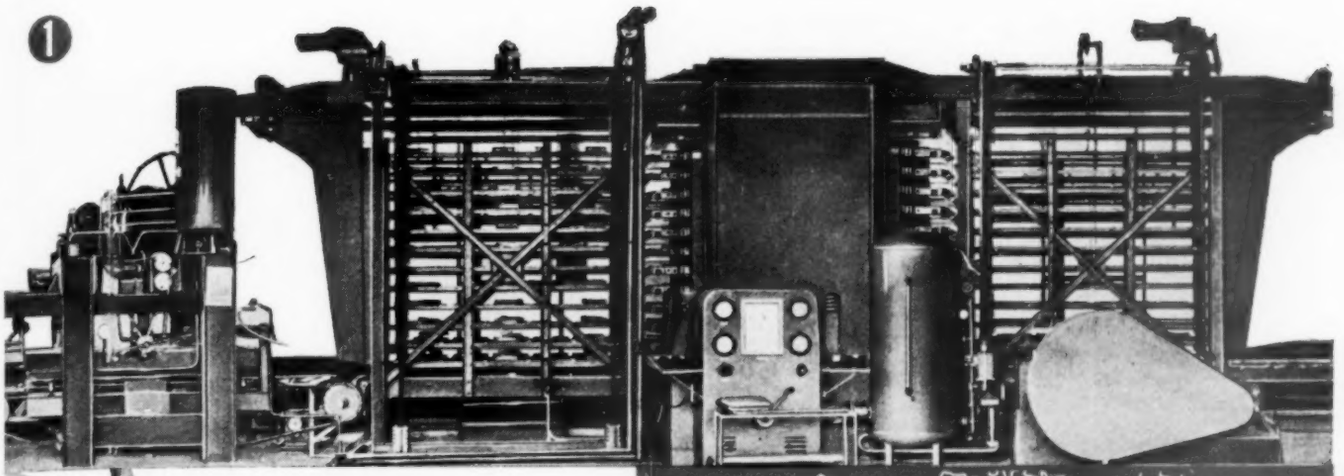

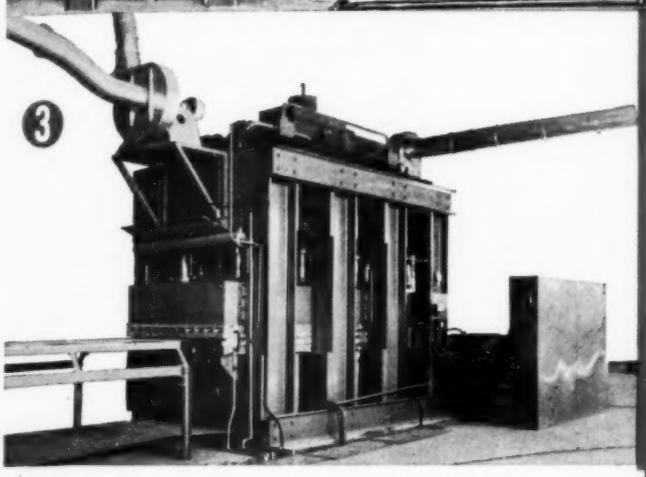

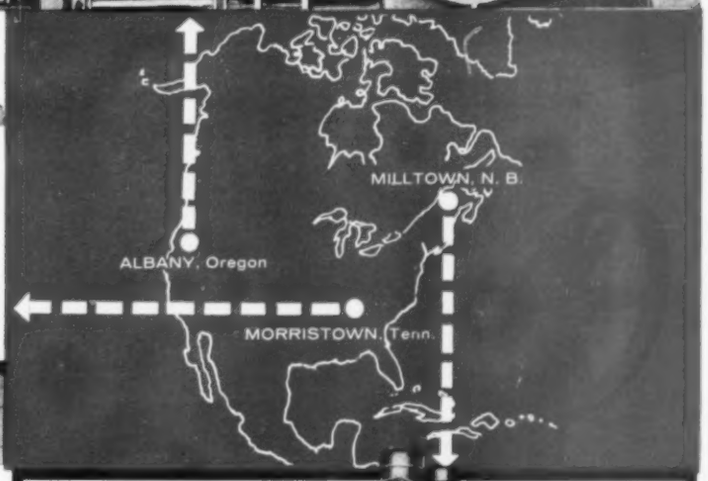

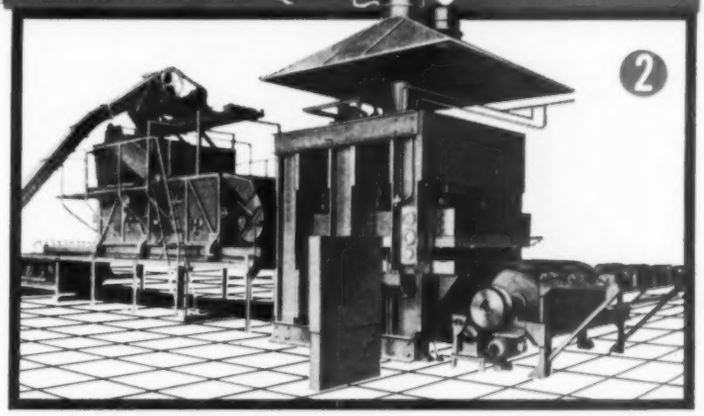

NOW MADE IN NORTH AMERICA!

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BISON BOARD — long recognized as the world's finest flakeboard — is now being made from planing mill shavings, cut-offs, scraps, and round wood in these three North American plants. All are producing finest quality ¾" board, meeting strict industry specifications.

The Bison System offers semi-automatic operation in single or multiple-opening press, with low installation, maintenance and operating cost. Call, wire or write for complete details.

1 WOOD FIBREBOARD CO., Albany, Oregon
Using planing mill shavings and cutoffs, producing 4' x 16' and 5' x 16' panels in a multiple-opening press. Finished board meets strict TECO specifications. Production: 4500 sq. ft. per hour.

2 FLAKEBOARD CORPORATION, Milltown, N.B.
Using round wood, making 5' x 16' panels in single-opening press. Production: 1200 sq. ft. per hour.

3 TENN-FLAKE CORPORATION, Morristown, Tenn.
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IRREGULAR

SHAPE SANDER

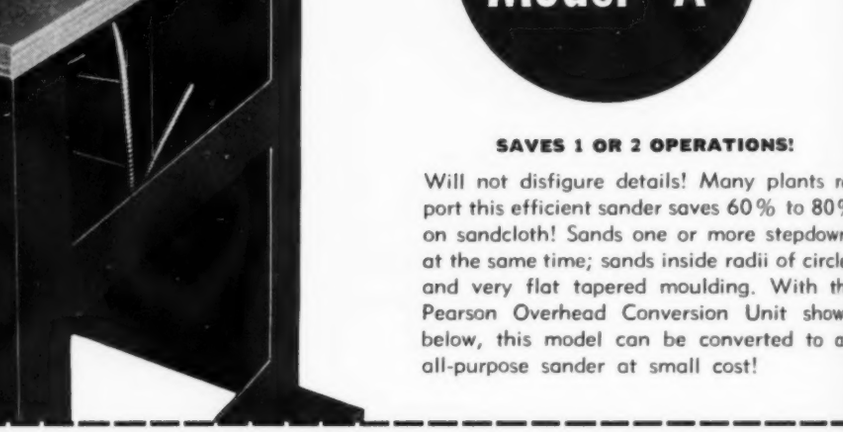
THE NEW

PEARSON Model "A"

SAVES 1 OR 2 OPERATIONS!

Will not disfigure details! Many plants report this efficient sander saves 60% to 80% on sandcloth! Sands one or more stepdowns at the same time; sands inside radii of circles and very flat tapered moulding. With the Pearson Overhead Conversion Unit shown below, this model can be converted to an all-purpose sander at small cost!

Standard equipment includes a one h.p. dustproof motor and 7 metal heads and 14 cushions made of finest grade rubber—

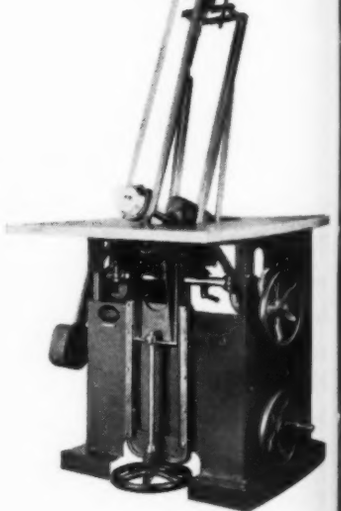


Length of cushions range from ¾" to 4"; outside diameters, 3¼" to 7".

WE SELL DIRECT!

This enables us to personally instruct your operator to get maximum efficiency from the machine.

This unit is fastened to the motor base and will track with the tilting of the motor. Idle pulley 5" OD x 4" face-sealed ball bearings. Belt length 8½: Model A Sander sold together or separately. Write for complete information.



PEARSON SANDING MACHINE COMPANY

HIGH POINT, NORTH CAROLINA

We also manufacture the well-known Pearson Block & Edge Sander

HITCHCOCK'S

WOOD WORKING DIGEST

FOR MANAGEMENT MEN IN WOODWORKING

Contents for October, 1961

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Coated Abrasive Knowledge—Your Key To Quality, Lower Cost—Part II 46
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Plywood Specialties Increase Production, Sales Potential 52
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New Developments In the Flush Door Industry 56
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The Romance Of Wood 60
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BPA

LOOKING AHEAD

- Production Manufacturing Of Flush Doors
- Fabricating With Particle Board
- New Developments In Wood Finishing

Promote
NATIONAL FOREST PRODUCTS WEEK
OCTOBER 15-21, 1961

Help make this year's NFPW a success by your participation. Building public awareness of the wood producing and using industries will help promote a better acceptance of wood.

October, 1961

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Hitchcock's Wood Working Digest
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School Bus Transportation
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Hitchcock's Wood Working Directory
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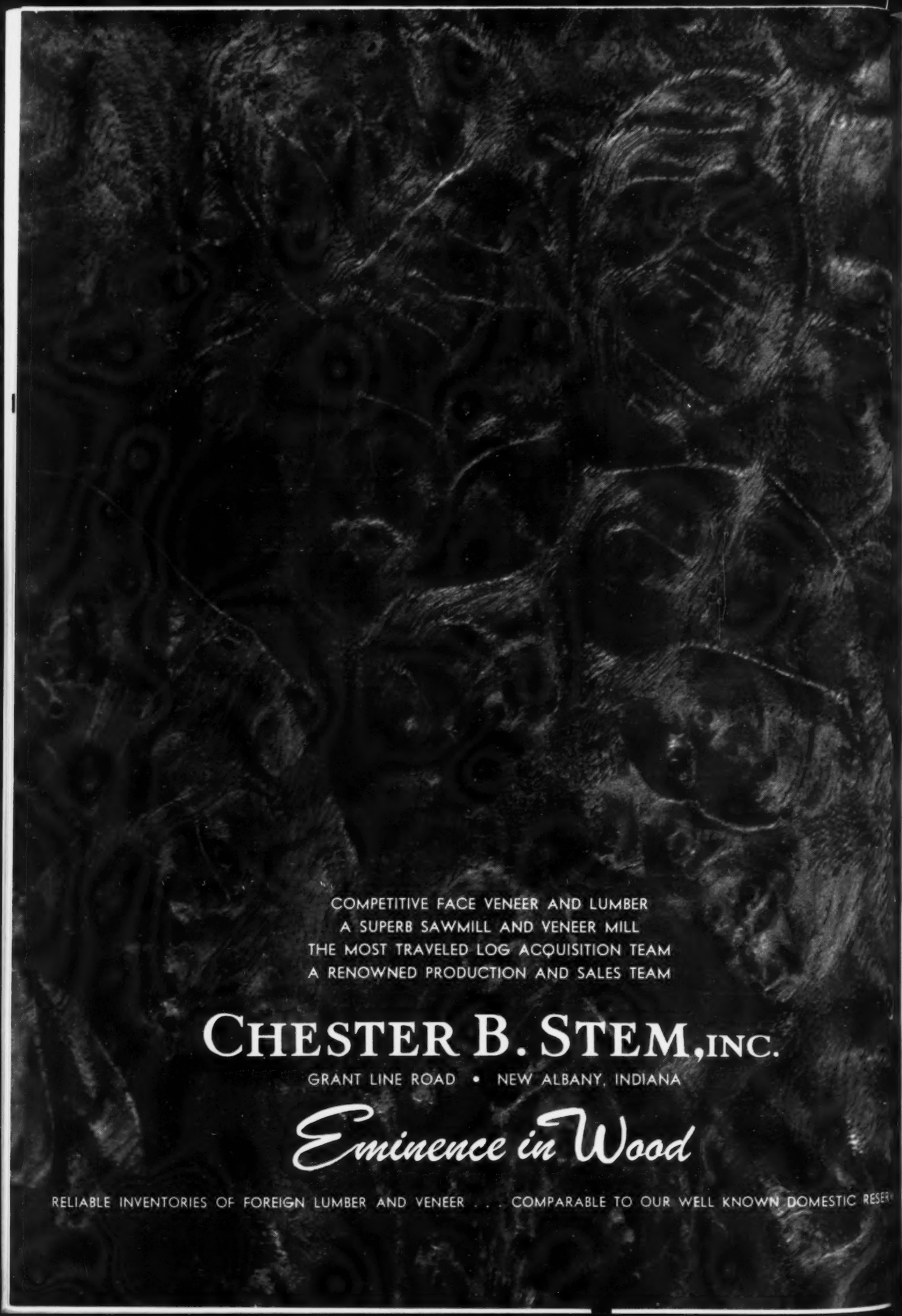
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A SUPERB SAWMILL AND VENEER MILL
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GRANT LINE ROAD • NEW ALBANY, INDIANA
Eminence in Wood
RELIABLE INVENTORIES OF FOREIGN LUMBER AND VENEER . . . COMPARABLE TO OUR WELL KNOWN DOMESTIC RESER

THIS IS RESPONSIBILITY ?? AND LEADERSHIP ??

As this is written, a crankshaft grinder at the Bendix Westinghouse Automotive Air Brake Company plant in Elyria, Ohio, is in trouble with his union . . . (yes, you guessed it, the United Auto Workers). It seems that this 42 year old father of eight children is doing more each work day than Reuther's henchmen (they are called labor "leaders") says he should. Walter Lucki (that's his name) was told to do no more than 322 bearings on his shift but he grinds 435 or 35 percent more. Because he exceeds his quota, Walter's employer pays him about $30 more per week. And when there are ten mouths to feed in the house, anything extra in the weekly pay check can be most welcome.

Before some sensitive reader brings up the hazards to life and limb to "overworked" workers, it should be noted that apparently the increased output does not place an extra burden on Lucki as most of his fellow workers were also able to produce up to 135 percent of their job quotas until August 26. Then some "brilliant" union strategist got the idea that Bendix-Westinghouse shouldn't get more than 322 bearings per man or what is termed by the UAW as "normal standard" or 100 percent of an arbitrary quota.

As one would expect, the company has filed a petition for an inquiry by the National Labor Relations Board into an unfair labor practice. To us, this is not just a dispute between management in a plant in Elyria and a union headquartered in Detroit. It goes much deeper and the effects of this and too many other similar cases in plants from coast to coast reaches into every American home and pocketbook. In fact, the principle involved could well become the difference between the survival of our way of life or the alternative of having our grandchildren grow up in a slave state.

With a real crisis in Berlin, our difficulties with Cuba, the troubles in Africa, Laos and elsewhere, our efforts to "catch up" to Russia in the space race . . . it would seem that every American owes it to his country, his family and to himself to do the best job possible . . . whether in direct defense work or other pursuits. Our counterparts in other countries of the world are doing it, not only in Russia but in the free world as well. This is evident to anyone who has visited Europe and the Far East in recent years. Higher production and material costs in this country are permitting our own allies in the free world to grab our markets. The result will be, less demand for our goods, fewer jobs, and yes, less dues for the union treasuries.

This country became great because our parents and those before them had the courage, ambition and drive of the Walter Luckis who fortunately still are found in the ranks of labor, farming and management. We can no longer afford the luxury of a "normal standard" in any area of American life. It will take "super-normal standards" on the part of all (especially labor leaders) to have the U.S.A. stay in the ball game.

Vincent C. Hogsett

Publisher

The new Moore PREFAB Kiln Building . . . ideally suited for temporary locations or permanent use by small, medium or large lumber and woodworking plants.

Portable or PERMANENT

Check these money saving features. The prefab wall and roof panels are easy to assemble — reducing erection costs. "WEDGE-SEAL" panel joint construction eliminates vapor leakage at critical joints. Insulated panels cut heat loss 50% or more. Maintenance cost is reduced because the PREFAB panels are double aluminum and insulated. And, the Moore PREFAB Kiln can be erected in some areas where building codes prohibit a permanent structure.

The Moore PREFAB Kiln Building is another of the fine products designed and manufactured by the world's leader in lumber handling and drying systems.

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memo: for Management

1961 Forestry, Timber And Woodworking Fair To Be Held In Dusseldorf, Germany, October 20-29

For the first time, the Forestry, Timber and Woodworking Fair in Dusseldorf will this year be held as a comprehensive international exhibition. From October 20 to 29, 1961, there will be an extensive display of machinery, equipment, tools and other accessories for forestry, the timber trades, and all associated activities. The West German Ministry of Food, Agriculture and Forestry will put on a special exhibition, showing by means of selected examples the meaning and importance of wood in all spheres of human activity, with particular emphasis on the economic aspect. Visitors will see, in a major scale display, the many-sided importance of the Forestry and Timber Industry—Forest and Wood—from the original production and the felling of the timber throughout all the various stages right up to the finished product.

The Forestry, Timber and Woodworking Fair will comprise the following main groups, appropriately subdivided: Re-forestation, forestry equipment and tools, optical and fine-mechanics apparatus, machines, workshop requirements, timber seasoning and drying, wood preservation, improvement and impregnation, wood as raw material, timber trades, building and structures, interior decoration and furnishing, woodware, soil cultivation machinery and equipment, transport rationalization, technical and trade books and periodicals.

The Fair will be supported by many of the trade associations, their presidents or chairmen forming the honorary presidium and the advisory panel. An executive Fair Committee includes representatives of various organizations, including the Deutsche Holzwirtschaftsrat, Bonn, the Arbeitsgemeinschaft Holz in Dusseldorf, the Deutsche Forstwirtschaftsrat in Rheinbach near Bonn, and the Schutzgemeinschaft Deutscher Waldin Herzberg/Harz. The Fair Committee has decided that the 1961 Fair should be entrusted to the management of the NOWEA—Nordwestdeutsche Ausstellungs-Gesellschaft mbH., Dusseldorf, Messegelande. Any German or foreign firm which has something of interest to say or to show with respect to forestry, timber or woodworking can qualify as an exhibitor. All questions relating to space lettings, placing, catalogue contents, press publicity and advertising are in the hands of NOWEA with the support and advice of the appropriate working committees.

The Fair, with its wide-spread range of exhibits, will be a major meeting-place for an international assembly of experts in forestry, the timber trades, building, the wood working and consumer industries, manual crafts and mining.

Chateaubriand once said: "The great cultural races of the world emanated from the great forests and have ended in the desert." May the 1961 Forestry, Timber and Woodworking Fair make a contribution to the end that forests and wood may maintain their position in the life of our people as a constituent part of German culture.

Since the beginnings of man's existence he has used many materials to ease and improve his life, but of these none has accompanied him so faithfully through his chequered history as wood has done. Even today, the value of world wood production exceeds that of coal and iron.

As a raw material, wood has a complex structure and occurs in an almost inexhaustible diversity of forms, and its working and processing requires specialized knowledge.

Wood is lasting, attractive, easy to work, noise and heat retaining, healthy and modern. It is these properties which find expression in modern prefinished components, in elegant flowing structures of glued joists and beams, in versatile, flexible, non-swelling and largely non-inflammable chipboard, fibreboard and plywood. In conjunction with plastics and wood protective agents for sealed parquet floors, kitchen, or roof timbers, wood is in every respect a modern and economical raw material. To expound these properties is another purpose of the 1961 Forestry, Timber and Woodworking Fair.

Only if wood retains its significance and its market as a raw material—and expands it in some respects—can we have the assurance that woods and forests will remain an indispensable factor in land improvement so long as mankind peoples this earth. The purposeful and effective use of wood, such as the Fair will demonstrate, contributes to meeting the cost of maintaining and developing our woodlands and the benefits derived from them.

N.F.T.C. Publishes New Book

The National Furniture Traffic Conference, Inc., has just published a new book titled "Furniture Traffic Management Reports," containing many of the outstanding addresses and reports delivered at its first annual Furniture Traffic Managers Convention, held recently in Chicago.

Some of the features of the book include a 4-page outline of factors a company should consider before deciding to operate its own trucks; practical suggestions on steps to reduce the incidence of shipping damages; an invaluable form used by one of the nation's leading furniture producers to analyze company truck operating costs; and distributed with the book is a hanging wall chart for company shipping rooms outlining carrier rules for marking shipping containers, plus two pamphlets explaining railroad split delivery service.

This 60-plus page book may be purchased through the National Furniture Traffic Conference, Inc., 335 East Broadway, Gardner, Mass., at $5.00 per copy.

NAFM Labor Conference Speakers Selected

Charles A. Kothe, vice president in charge of industrial relations, National Association of Manufacturers and Lynn W. Beman, labor relations counsel for the National Association of Furniture Manufacturers are among the experts addressing the NAFM's Industrial and Labor Relations Conference, November 8-10, at Cornell University, Ithaca, New York.

The conference is co-sponsored by the New York State School of Industrial and Labor Relations at Cornell, and will also hear Cornell staff specialists, Professors N. Arnold Tolles and Emil A. Mesics.

Wednesday—November 8

Kothe will speak at the opening session at 1:30 P.M. on "Industrial Relations Problems of the Non-Union Plant." He will also divulge specific employer problems arising when a plant is confronted with an organizing drive and suggest ways to meet them.

Thursday—November 9

"Problems of Wage Competition in the Furniture Industry" is the subject for discussion Thursday morning. Speaking will be Professor Tolles, who is presently engaged in a specialized study of wage competition in this industry.

Thursday afternoon's program highlights a talk by Beman on "Industrial Relations Problems of the Organized Plant." Emphasis will be on "Negotiating the Contract."

Friday—November 10

Professor Emil A. Mesics will give a presentation on "Developing Effective Communications," at the final session Friday morning.

Following each session will be periods for round-table discussion, questions and answers to problems. There will also be periods for individual manufacturer consultation with Beman.

He urged manufacturers to send in registrations early because attendance will be limited to 50, to provide maximum benefit from the informal round-table discussion format.

Establish First Particle Board Standard

Quality requirements for particle board are described in a Commodity Standard adopted by industry and published by the U. S. Department of Commerce. This was the 500th Standard adopted since the Government industry cooperative program was begun in 1921.

This newest Standard became effective for new production June 1, 1961, after having been widely endorsed by many manufacturers, and by representative distributors, builders, and architects, as well as by some furniture, plywood and adhesive manufacturers.

Developed in cooperation with the Forest Products Laboratory, Madison, Wisconsin, it covers performance criteria for modulus of rupture and elasticity, internal bond, linear expansion, and screw holding ability. A uniform method of grade marking Commercial Standard quality particle board with the symbol "CS236-61," is also provided.

Printed copies of this newly established Commercial Standard for Mat-Formed Wood Particle Board for Interior Use, CS236-61, are now available for 10 cents each from the Superintendent of Documents, Government Printing Office, Washington 25, D.C.

Wood Industry's Growth Analyzed By U.N.'s Wood-Economy Expert

On the occasion of the Kiel lectures held in the Institute for World Economy at the University of Kiel in 1960, Dr. J. A. von Monroy, the wood-economy expert of the Food and Agriculture Organization of the United Nations, analyzed statistics showing the increase in world production of wood and the remarkable growth of the wood industry. The following excerpts are quoted from statements made in his lecture for your information and use:

"The world production of utility wood has increased during the years 1946 to 1958 from approximately 580 million cb. mtr. (20,486 million cu. ft.) to approximately 930 million cb. mtr. (32,848 million cu. ft.), that is by about 60% within 12 years.

"A quantitive comparison of the production of wood with other world raw materials shows that in 1958 the world wood production amounted to about 1,300 million tons, that of coal about 2,000 million, of mineral oil about 900 million, of cement about 300 million, of iron about 250 million and of aluminum about 3 million tons. In 1956 the production of grain amounted to about 800 million tons, of cotton to 9 million tons and wool to 1.3 million tons. Thus, following coal, at the present time in point of weight wood holds the second place among industrial raw materials in the primary material production of the world.

"On a world average the fact applies that approximately two thirds of the statistically recorded round timber passes into the sawmills, one quarter to the pulp and paper industry, one twentieth to the plywood industry and not much more than a one hundredth part in processing into other kinds of board. The world production of plywood increased from 3 million cb. mtr. (106 million cu. ft.) in 1938 to 13 million cb. mtr. (459 million cu. ft.) or about 9 million tons in 1958; the fibre board production from 0.8 million tons in 1938 to 3.6 million tons in 1958. The chip board production has experienced a very rapid rise to more than 1 million tons.

"The consumption of wood per head of population (utility wood and fuel wood) shows for North America about 2.2 cb. mtr. (77.7 cu. ft.), Australia and New Zealand, 1.7 cb. mtr. (60 cu. ft.), Soviet Union 1.6 cb. mtr. (56.5 cu. ft.), South America 0.9 cb. mtr. (31.8 cu. ft.), Europe 0.7 cb. mtr. (24.7 cu. ft.) and Asia 0.2 cb. mtr. (7.1 cu. ft.).

"In the course of this lecture the following was stated in respect to the consumption of wood in Germany: The consumption of utility wood is sub-divided as indicated below:

Dwelling accommodation construction	30%
Pulp and Paper	20%
Processing of wood	14%
Mining timber	13%
Surface, sub-surface and hydraulic construction work	1%
Building joinery work	10%
Sleepers and masts	3%

"In the greatly disputed sphere of floorings, in 1959, 45% of the entire floor area for dwellings and offices fell to the share of wood in the form of plank floors and inlaid parquetry floors.

"The chipboard production rose within 9 years from 20,000 cb. mtr.

(706,400 cu. ft.) to about 550,000 cb. mtr. (19,426,000 cu. ft.) whereby the Federal Republic of Germany, with about 30% of the world production in this sector, developed into a pioneer country. The requirement of cut wood per dwelling unit has dropped during the course of the last 15 to 20 years from about 21 cb. mtr. (742 cu. ft.) to 7-8 cb. mtr. (247-283 cu. ft.)."

Advantages of Wood For Furniture Cited by Forester

Howard J. Doyle, Statesville, N.C., Council Forester for the Furniture, Plywood and Veneer Council told a meeting of the Alabama Chapter, Society of American Foresters that, "Wood has been the chief material used for furniture since the earliest recorded time. Wood offers many advantages to the furniture manufacturer which give every indication that it will continue its place of prominence in this field." Some of these advantages are: adequate renewable supply, unsurpassed beauty and character, easy working qualities and flexibility, great stability and permanence, and highly desirable thermal and conductive properties.

"As the population explosion mushrooms," Doyle added "more and more wood furniture will be required along with the thousands of other forest products to maintain our high standard of living. Therefore, the possibility of an over-supply of timber in the future appears most improbable and academic. This is especially true of high quality hardwoods from which most wood furniture is constructed. The Timber Resource Review classifies 74% of all eastern hardwoods as poor grade or cull trees."

Lumber Production First Six Months of 1961

According to estimates of the National Lumber Manufacturers Association national production of lumber in the first half of 1961 totaled 15,718,—000,000 bd. ft. This represented a decline of 14 per cent from the corresponding period of last year. Shipments from lumber mills this year, meanwhile, were nine per cent below the first half of 1960, while new orders booked were off six per cent. Total lumber production during June was estimated at 2,885,000,000 bd. ft., a decrease of ten per cent from June 1960.

New Hardboard Products Increase Dealer Sales

Development of new hardboard products for the construction industry means sales of $25 million annually for the nation's building materials dealers, the Forest Products Research Society was told at its annual meeting in Louisville, Kentucky. Walter C. Walling, president of the American Hardboard Association (AHA), described the impact of hardboard developments on retail sales as part of a discussion of the rapid growth of the industry.

The American economy currently is using some two and one-quarter billion sq. ft. of hardboard annually, of which about one-half billion is purchased through retail lumber dealers, Walling said.

Historically, hardboard consumption has doubled every eight to ten years. From 1951 to 1959 there was a 113 per cent gain, he said. In analyzing the annual increase of approximately 10 per cent, Walling attributed 15 per cent of the gain to population growth, 40 per cent to greater acceptance of hardboard for established uses and 45 per cent to the development of new uses or exceptional expansion of older ones.

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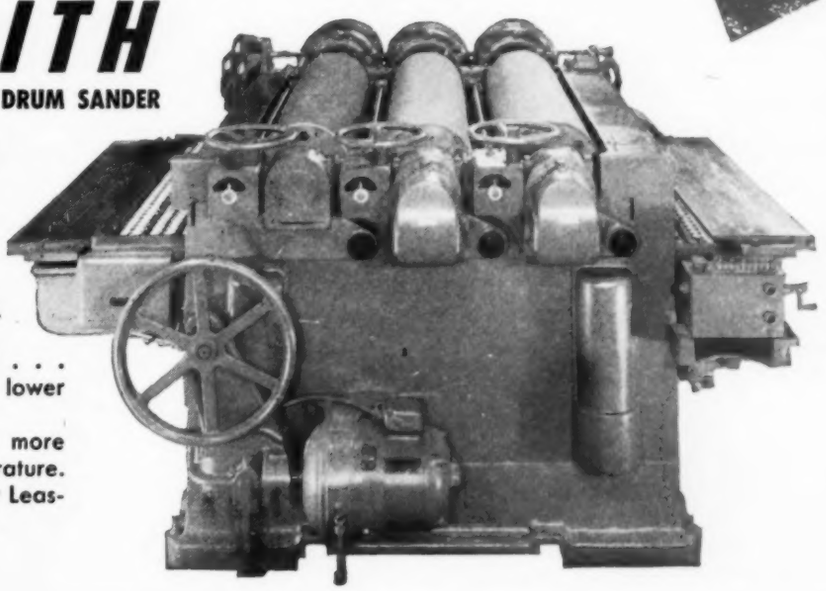

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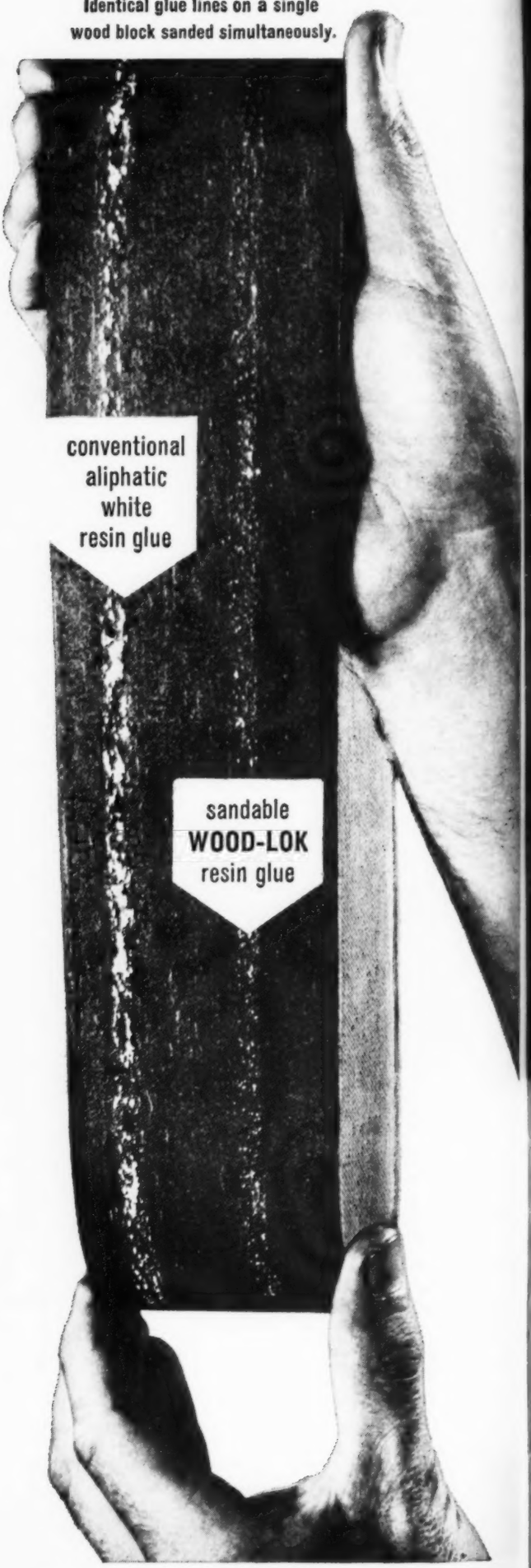

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The Editor's Page

A New Attitude

The past few years have seen a great resurgence in the wood industry to gain greater acceptance for its products. Much has been said and done about research, development and marketing that will help push this acceptance to greater heights. However, there is one segment of management thinking in the woodworking industry that needs readjustment to bring about the full benefits that can be derived from these improvements.

A new attitude must be taken on the *investment required in both equipment and labor* that will allow the woodworking industry to take full advantage of technological and marketing improvements.

To point out the need for a change in attitude, let's look at a make believe situation. What would your reaction be if your company's research and development team, in conjunction with your production engineering staff worked out a new system that would cut the cost of a part 35% and improve its quality? You would say "wonderful"! However, would your reaction still be favorable when you found out the investment required to put this program into effect? Then would you, as the executive required to make the decision on expenditures, order the necessary funds that would implement the full increase in production and the improvement in quality?

We, as an industry, need the conviction, farsightedness and courage necessary to back up the new advances that will permit the production of better products at lower cost. Without the necessary production tools, we can never gain the full benefits that will allow us to compete successfully for the consumer dollar. The wood industry cannot afford to back down now in the face of an increasing market for products made of wood!

Although we have been critical of the lag in the investment of funds for better equipment and greater worker skills that go along with these improvements, there are many bright spots that show a true awakening to the potential of full production.

One example we know of points this out very well. The particular company we have reference to has invested in a fully automated production line that will take a rough piece of stock and turn out a completed part. Operations formerly, handled on a number of separate machines with a great deal of stock handling, are now completed in one pass through this special production line. This required a large investment but the reduction in costs and the improvement in quality will more than off-set the expenditure.

The woodworking industry should demand the best in machinery and equipment. It should not be satisfied with any machine that has not seen improvements in years. However, to justify these demands it must also be ready to back these demands with the necessary investment for new and improved production facilities that will provide an incentive to the equipment manufacturer.

To point out the position of the equipment manufacturer one executive told me about an inquiry his firm received recently. The machine in question met every demand for doing a job at lower cost but when the price was mentioned he was told it was too high. As a result, the woodworking executive did not purchase the machine and his firm is still using the old hand method. This machinery executive, whose firm also supplies other industries, felt a great deal could be done for the woodworking industry if it would purchase equipment at a price that would allow a fair profit.

This *new attitude* on equipment investment will probably require a completely new concept of greater production, with longer runs, to make full use of the increases possible with new methods and machines. This will provide the volume necessary to lower costs and widen markets. Only then will the woodworking industry be able to capitalize on man's natural love of wood that is being promoted so successfully today.

Clarence A. Pearson

Editor

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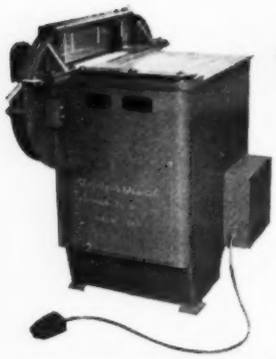

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18" x 3½" capacity, underneath cut, air operated for positive control of cutting action. Automatic or semi-automatic cycling for any desired speed up to 75 strokes per minute. 5 or 7½ HP motor. Left or right hand optional. Can be equipped with tumble gauge bar, adjustable stops, outfeed stock channel with automatic kicker, and infeed roller table.

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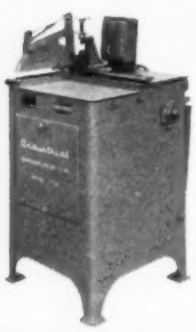

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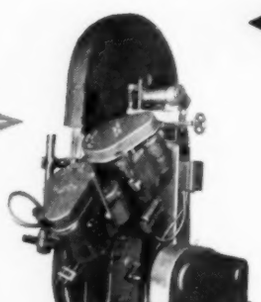

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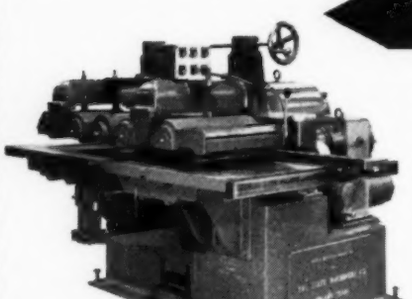

TRI-STATE MODEL 816 HEAVY DUTY GANG RIP SAW

A precision heavy duty gang rip saw having 8 powered feed rolls driven by compact Louis Allis 2 or 3 HP variable drive. A 16" long by 2" dia. saw arbor is mounted in large precision ball bearings & runs in high speed spindle oil. Direct or belted drive provides spindle speeds 3600 to 7200 RPM. 12" dia. blade cuts 3" stock thickness . . . arbor assembly adjusts on precision wedge bed . . . power raising & lowering of arbor . . . adjustments for aligning arbor with feed rolls. A machine for heavy horsepower requirements . . . straight line or "lead to" fence ripping.

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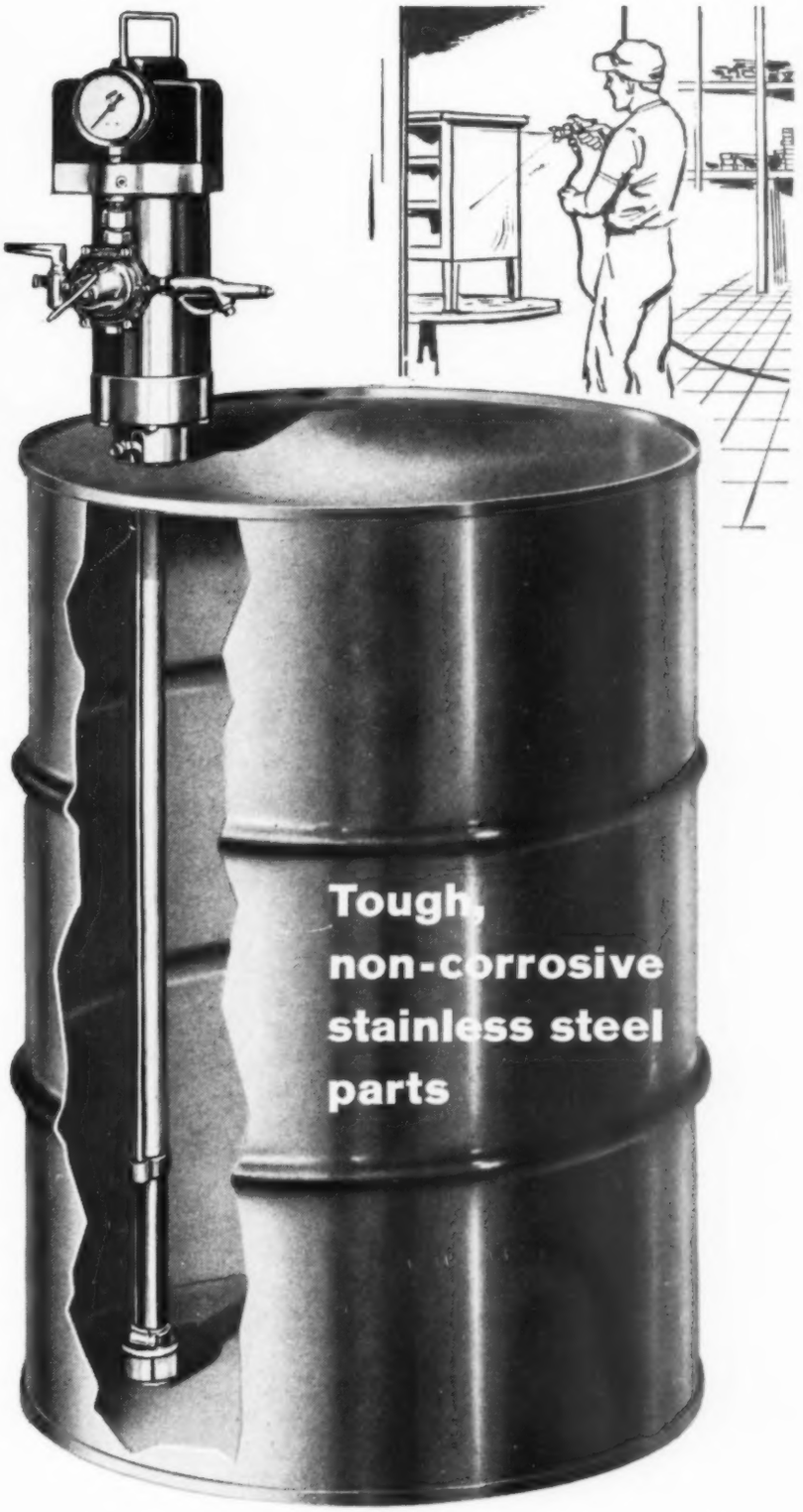

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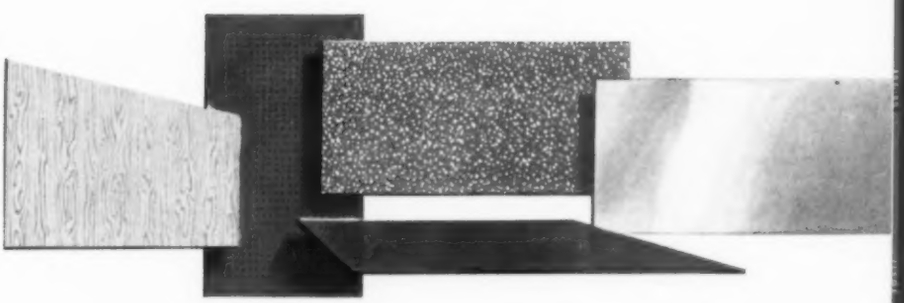

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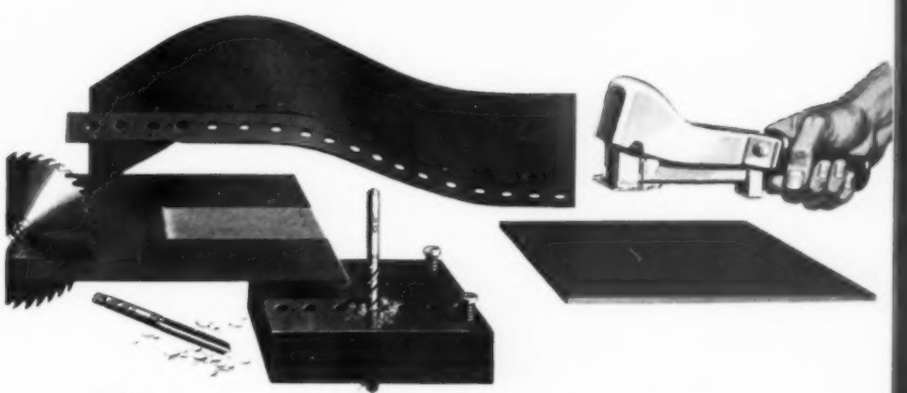

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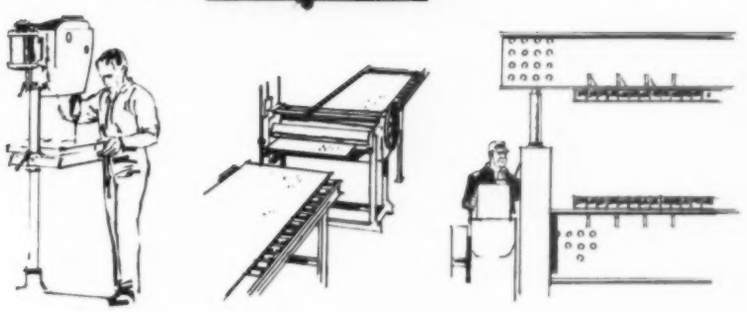

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SAW TIPS

Tip of the month: band saw blades made of Swedish steel will withstand the high speeds of band sawing without crystalizing or cracking. Thus blades hold their cutting edge longer and have longer blade life.

About Swedish steel . . .

The remarkable chrome-nickel alloy steel that is made in Sweden offers many benefits when used for wood-cutting band saw blades.

One of the unique properties of this metal is its ability to be sharpened to a keen cutting edge. This same property enables blades to be resharpened and reset to their original cutting quality.

When used in blades, Swedish steel will withstand the high speeds of band sawing without crystalizing or cracking. This enables blades to hold their cutting edge longer, providing users with longer blade life.

About Nickel-Steel band saw blades

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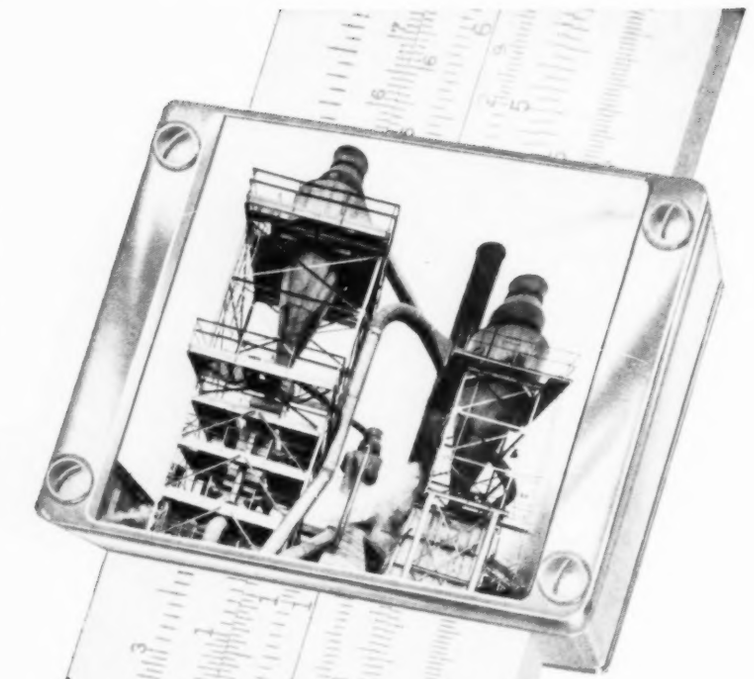

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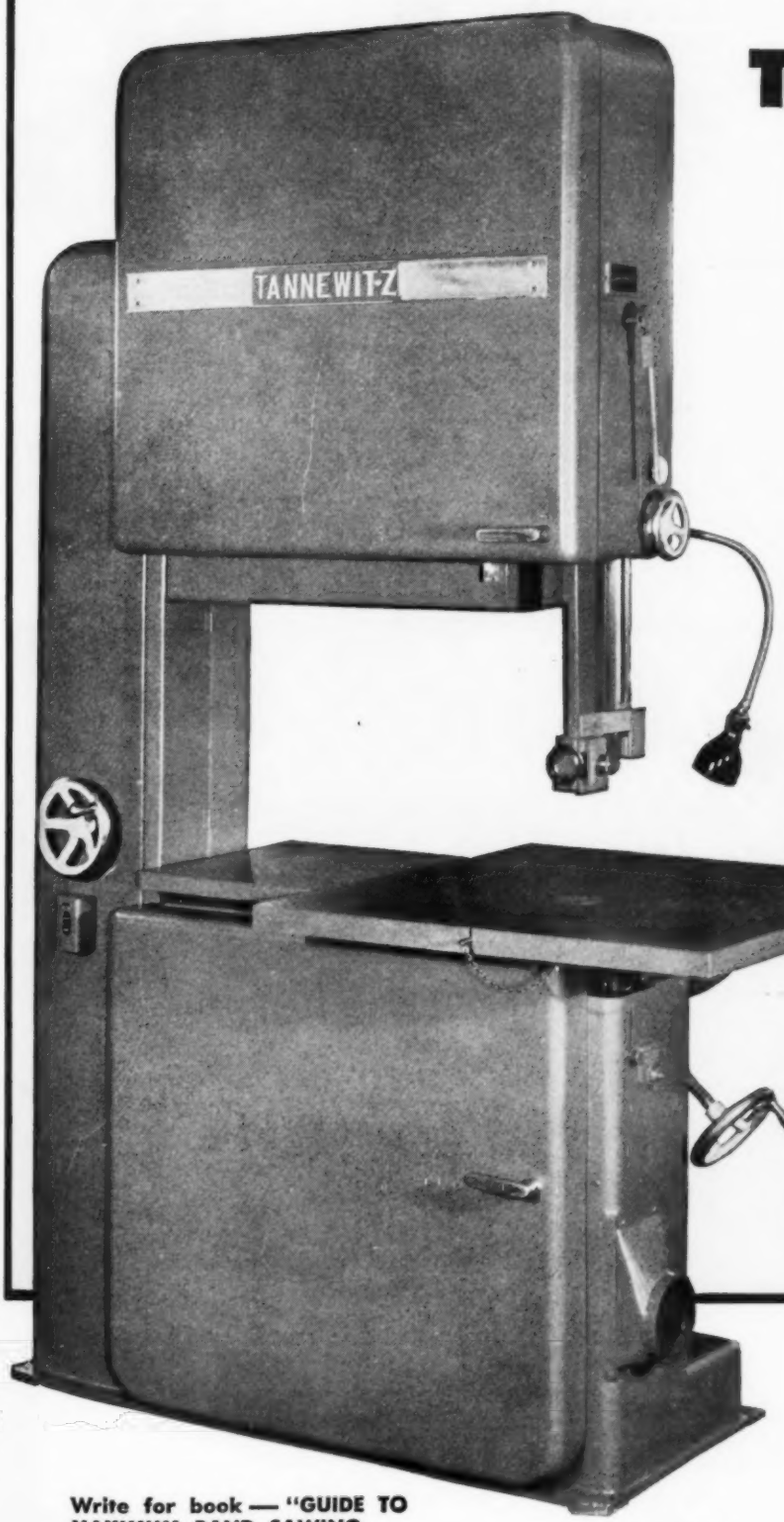

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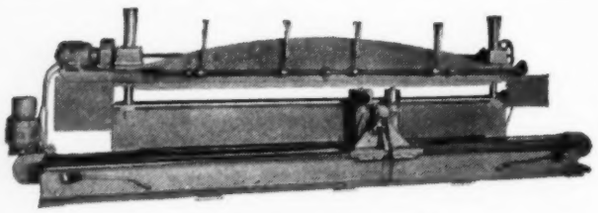
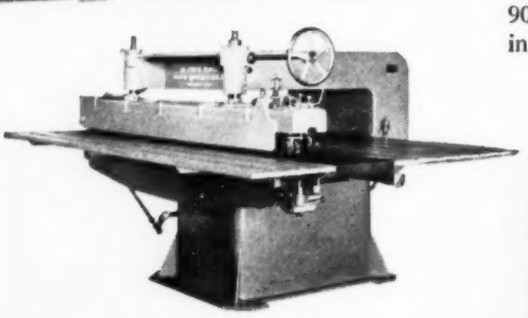
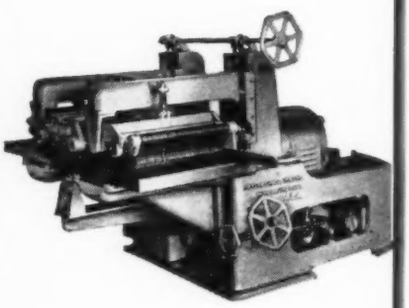


VENEER JOINTER — Traveling head principle eliminates shifting. Perfectly joints bundles of veneer up to four inches thick. Sizes from 90″ to 212″. Described in Jointer Bulletin.



VENEER SPLICER—Makes precision tapeless joints. Adjusts automatically for varying thickness of veneer normally fed through machine. Welded steel frame with 49″ throat clearance at right. Described in Bulletin No. 50.



NO. 441-A GANG RIP SAW—For fast production on difficult gang ripping jobs. Eight power driven feed rolls . . . 12″, 19″, or 24″ saw space. Up to 150 HP. Variable feed drive up to 300 ft. per minute. Glue joint accuracy. Described in Bulletin No. 441-A.

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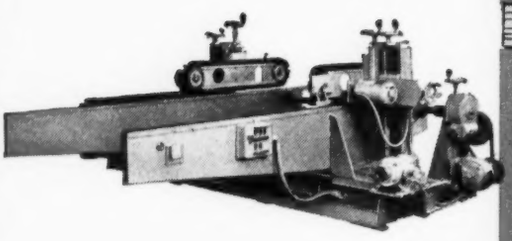
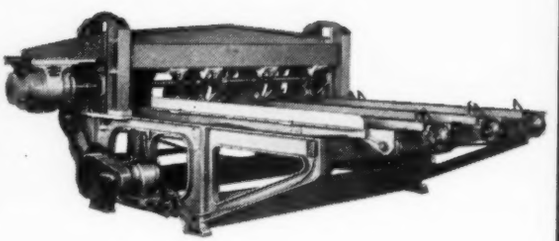
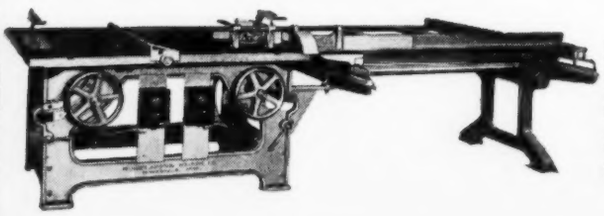


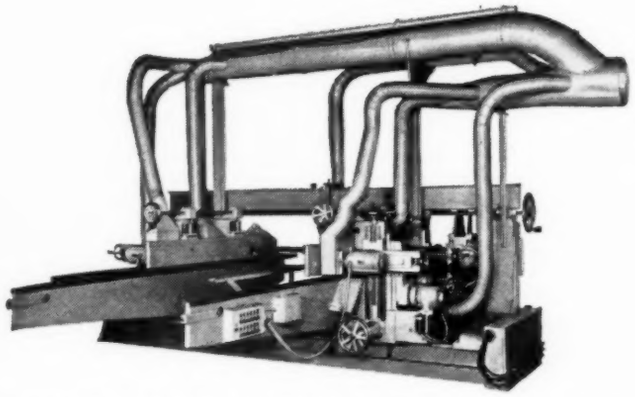
NO. 600 DOUBLE CUT-OFF SAW
Accurate production at high rates of feed. Labor saving attachments such as cope motors, dado arbors and other equipment are available for specific needs. Larger sizes available. Described in Bulletin No. 600.



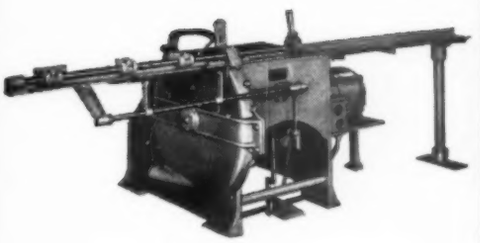
NO. 435-H MULTIPLE CUT-OFF SAW—Cuts long boards into short pieces . . . will square-cut large size sheets . . . and will cut any number of grooves. Excellent for sizing plywood. Described in Bulletin No. 435-H.



NO. 442-MT COMBINATION SAW—A versatile machine for ripping, cross-cutting, grooving, dadoing, beveling and mitering. Cuts up to 48″ wide and rips up to 50″ wide. Handles large stock easily. Described in Bulletin No. 442-MT.

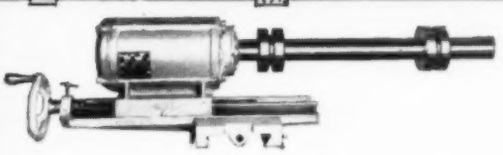


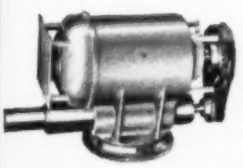
NO. 400 DOUBLE-END TENONER —Sizes up to 20′ to fit your requirements. Will square-cut up to 96″ ahead of trim saws. Numerous accessories are available to multiply its usefulness. Described in Bulletin No. 400.



NO. 477 CUT-OFF SAW — Capacity equals two or three swing, straight line or roller carriage cut-off saws—depending on type and condition of stock used. An excellent machine for box work. Described in Bulletin No. 477.

Here, on these two pages, in your own copy of this magazine, we bring you the full line of Mereen-Johnson production woodworking machinery. But because this space is limited, we ask you to write for illustrated bulletins covering any of these Mereen-Johnson Machines.





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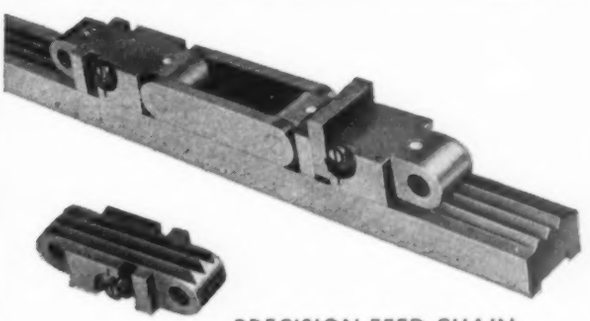

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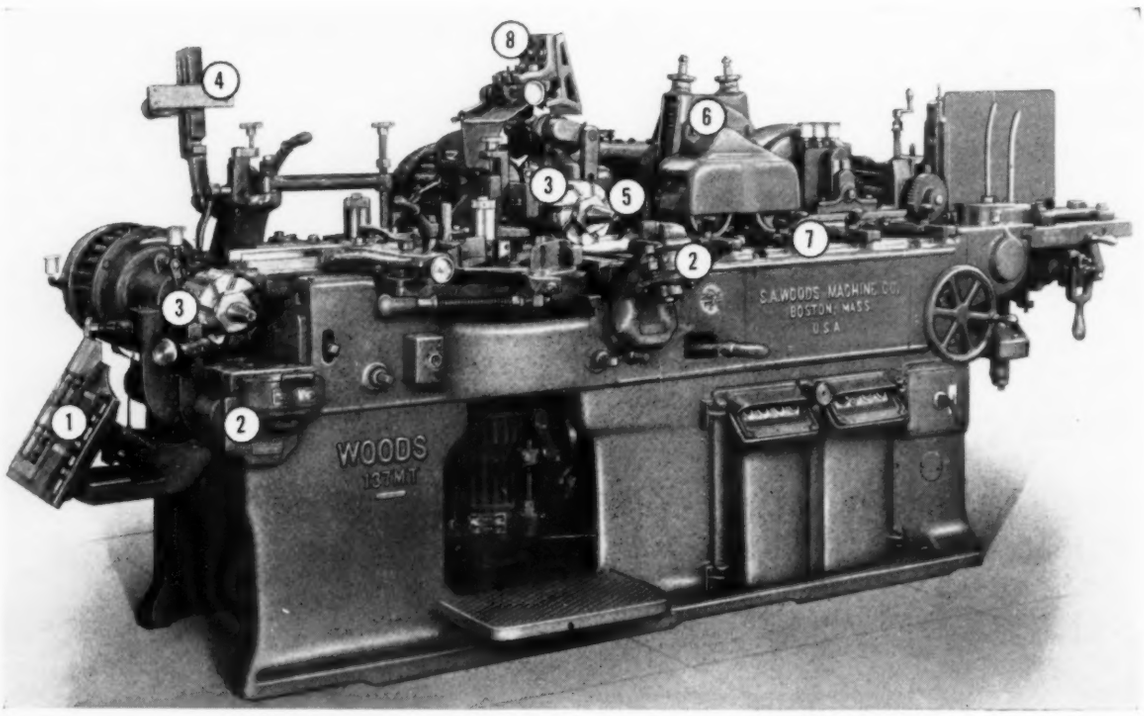

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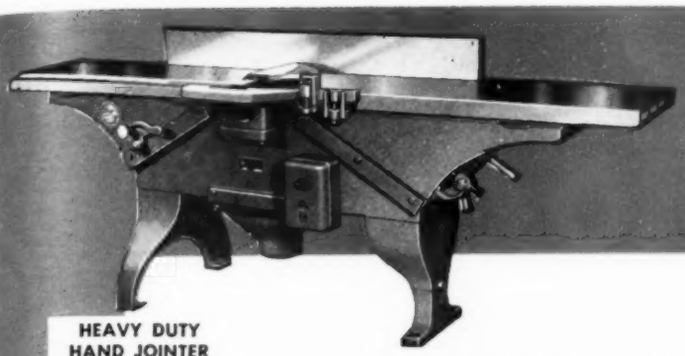

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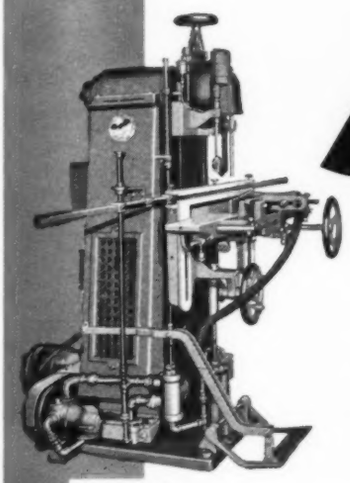

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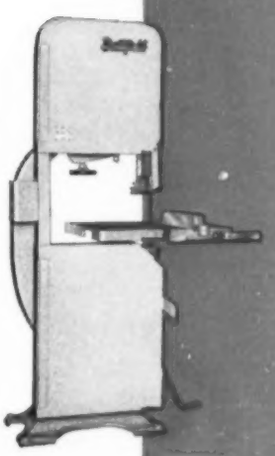

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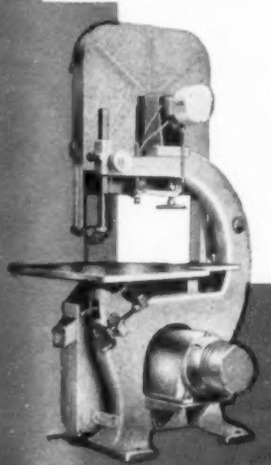

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Properties and Uses of some minor Western Softwoods

by BENSON H. PAUL

Some species of forest trees produce lumber admirably suited for certain special uses. They have inherent characteristics, such as durability, strength, stiffness, and hardness or softness, that fit a particular use requirement. However, not all such species are utilized most advantageously with respect to their natural attributes; they may grow in areas far removed from the most suitable market, or occur only in small amounts, widely scattered, so that for the most economical production they are logged, milled and sold without distinction from more abundant associated species.

Higher Grades Of Lumber Are Often Specified Than Are Necessary

The lumber grades obtainable, of course, have a decisive effect upon the ultimate use. Some uses specify clear lumber and the lower grades of a species are a drug on the market and must be channeled to a subordinate use, such as pulp or other fiber products. Oft-times specifications call for higher grades than are necessary and lower grade lumber that would have served the purpose well are passed by. Sometimes retail lumber yards do not stock the lower grades and as a result the user buys high grade lumber even though his use does not warrant it. This is wrong because the nations supply of high-grade lumber is being utilized much more rapidly than it is being replaced by growth.

Cedar Species Known For Adaptability For Special Uses

Among the minor western softwoods, the several species known by the name "Cedar" have gained a reputation on the basis of their adaptability for a special product. The Cedars have quite similar qualities in their wood, one being the high durability and resistance to decay of their heartwood. (It must be remembered that sapwood of all species lacks decay resistance.)

Alaska-Cedar is a large tree of the northwest Pacific Coast region that grows north to Canada and Alaska. The heartwood of this species is bright clear yellow, the annual rings are narrow, the wood is fine textured and straight grained; it is moderately strong, shrinks little in drying and is easily worked. Alaska-Cedar is highly resistant to decay, dries readily and stays in place well. It is used for interior finish, furniture, hulls of small boats, cabinet work, canoe paddles, patterns and pyrographs. It is sought because of its excellent working and finishing properties.

Port-Orford-Cedar has a limited distribution in southwestern Oregon and northwestern California, mostly within 25 miles of the coast. Important uses for this species are separators in storage batteries, Venetian blind slats and boats. Other uses are much the same as those of Alaska-Cedar. Its close uniform texture and excellent paint-holding properties have long made it one of the preferred woods for Venetian blinds. It ranks high in boat construction because of its texture, ability to stay in place, combined with the necessary strength properties.

Incense-Cedar grows in California, Oregon, and Nevada. The supply is much greater than that of Port-Orford-Cedar. The wood has a fine texture and spicy odor, the texture is fine. It is somewhat lower in weight and strength than Port-Orford-Cedar. Incense-Cedar is know as a source of pencil slats and Venetian blinds. Most of the lumber of high grade is used for these items. The lumber of lower grades finds use in construction. Its durability and ease of splitting makes it suitable for posts, poles, grape stakes, and split shingles.

Western Red Cedar is plentiful in western Oregon and Washington, northeast Washington, Idaho and western Montana. Its use for shingles is well known. Because of high durability it finds extensive use for poles, posts, and piling. Lumber goes into exterior siding, interior finish, greenhouse construction, ships and boats, caskets, containers, and millwork.

The Western True Fir Species

On the market, lumber of the several species of true Firs of the western United States are sold as "White Fir." (Douglas Fir is not a member of the genus, *Abies*, to which true Firs belong.) In general lumber of the true Firs is white in color, soft, relatively light in weight, free from pitch, moderately strong and low in decay resistance. In the past it has been passed by in favor of Douglas Fir and the western Pines with which it frequently grows. Sometimes, however, it has been logged, milled, and marketed with them. More recently, the true Firs are making a reputation on their own values and are gaining more wide spread acceptance.

The most important true Firs and their general regions of growth include:

Alpine Fir which grows at high elevations in the Rocky Mountain region; Pacific Silver Fir, found in the coast region from Oregon to Alaska; Grand Fir, in the Pacific coast and northern Rocky Mountain regions; Noble Fir, in the northwest Pacific coast region: California Red Fir, found in California and Oregon; and White Fir which is well distributed in the Rocky Mountain and Pacific Coast regions.

The wood of these six species of western true Firs has many characteristics common to them all. Those growing under more favorable conditions reach larger sizes and produce more lumber in the better grades. Lumber from Alpine Fir in the high mountains is generally of lower specific gravity and more knotty than its relatives in the coastal forests.

Noble Fir rates as one of the best of the true Firs. Its clear wood has good strength properties. The lumber is straight-grained and it finds use for such special items as interior finish, siding, flooring, sash and door stock, and light construction. Comparable grades of other true Firs can meet requirements of similar uses. The true Firs are of low durability and need preservative treatment when subjected to moist conditions. Their mechanical properties are in a medium range in agreement with their specific gravity which averages somewhat below that of Douglas Fir. However, strength and stiffness of suitable grades are adequate for house framing and for other light construction. The lumber dries well with moderate shrinkage. It is easily worked with hand tools. Nail-holding is somewhat lower than with heavier wood of some other species but splitting is less likely. The true Firs paint and glue well. Recently the better grade logs of several species have gained acceptance for the manufacture of veneer and plywood.

Englemann Spruce

Englemann Spruce is a soft textured conifer that grows in the Rocky Mountain region and the Cascades of Washington and Oregon. The wood is nearly white, with a medium to fine texture. The lumber is knotty because of the persistence of many small dead branches. It is suitable for building construction, subflooring, sheathing, and studding. Englemann Spruce and the true Firs are suitable for paper pulp.

TABLE 1. SOURCES, SUPPLY, PROPERTIES AND USES OF MINOR WESTERN SOFTWOODS
(From Various Publications Of The U.S. Forest Service)

		Properties—Tested In Green Condition				Uses	
Species	Region of Growth	Supply (Estimated) Millions of board feet	Specific gravity (1) Average	Modulus of rupture. Pounds per sq. inch	Hardness (2) side Pounds	Common	Special
Alaska-Cedar (Chanaecyparis Nootkatensis)	Southeast Alaska thru Oregon.	650 in Oreg. and Wash.	0.42	6,400	440	Boats, interior finish, cabinet work.	Patterns, pyrographs.
Port-Orford-Cedar (C. Lawsoniana)	Southwest Oregon and Northwest California.	500	.40	6,200	400	Millwork, boats.	Battery separators, Venetian blinds.
Incense-Cedar (Libocedrus Decurrens)	California, Oregon and Nevada.	10,800	.35	6,200	390	Lumber, fence posts.	Pencils, Venetian blinds.
Western Red cedar (Thuja Plicata)	Pacific Coast to Alaska, inland to Montana.	32,000	.31	5,100	270	Lumber, ships and boats, millwork, poles.	Shingles, furniture, veneer.
Noble Fir (Abies Procera)	Washington, Oregon.	12,800	.35	5,800	290	Lumber, interior finish, millwork, boxes.	Aircraft, Venetian blinds, ladder rails, veneer.
California Red Fir (A. Magnifica)	California and Oregon.	16,500	.37	6,000	380	Lumber, house construction, millwork, boxes.	Veneer
White Fir (A. Concolor)	California, Oregon and Rocky Mountains.	66,300	.35	5,700	330	do	Interior finish, panels, veneer.
Grand Fir (A. Grandis)	Washington, Oregon and California.	24,000	.37	6,100	360	do	Veneer
Pacific Silver Fir (A. Amabilis)	Washington, Oregon.	60,800	.35	5,700	310	do	Veneer
Alpine Fir (A. Lasiocarpa)	Washington, Oregon, Rocky Mts.	3,600	.31	4,400	220	do	Pulp
Englemann Spruce (Picea Englemanni)	Oreg., Wash., Rocky Mts.	30,000	.31	4,200	240	Lumber, building construction, boxes.	Pulp

(1) Based on oven-dry weight and green volume.
(2) Load required to embed a 0.444 inch ball to ½ its diameter.

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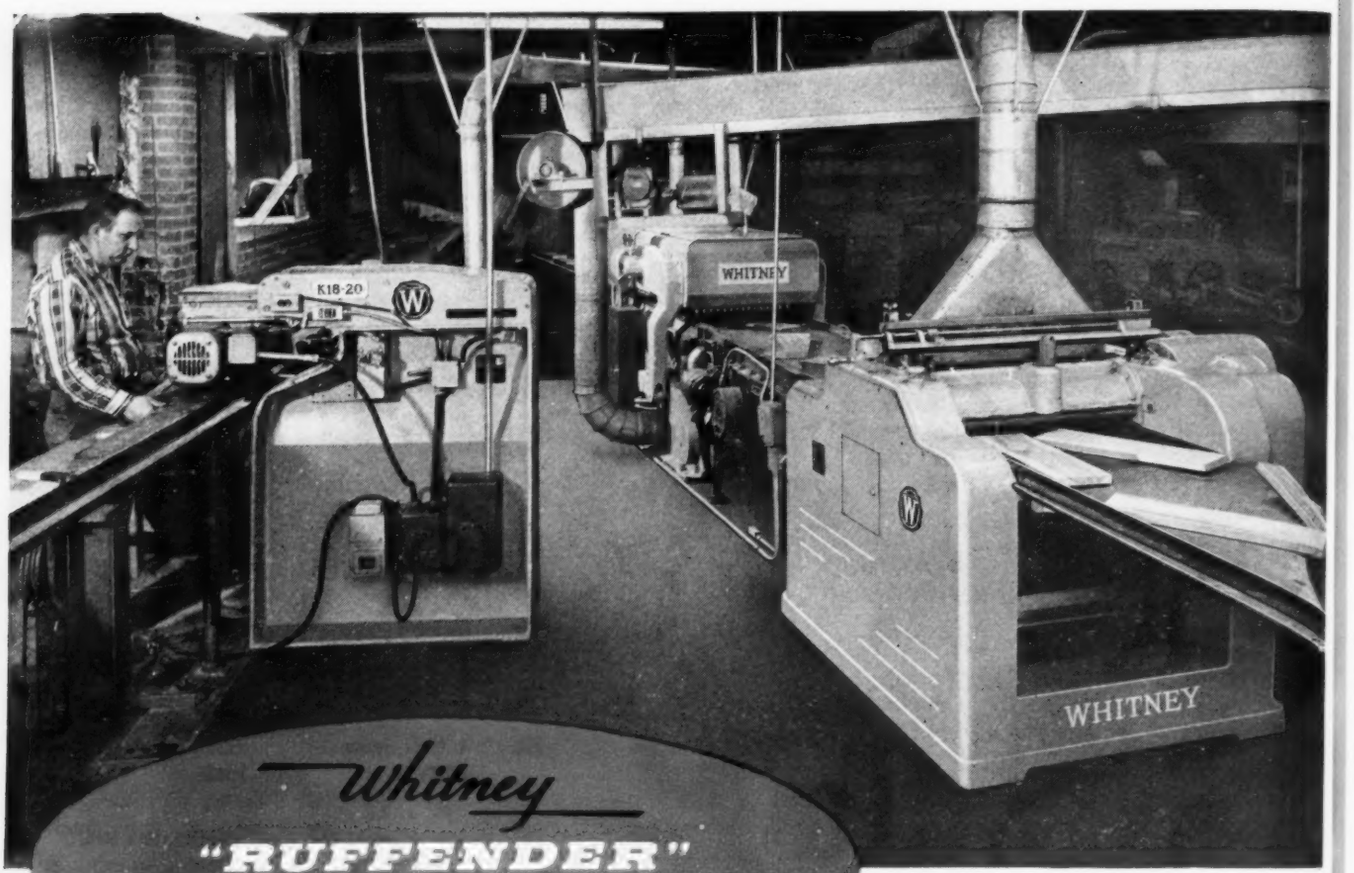

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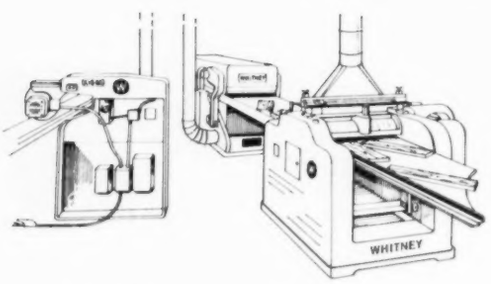

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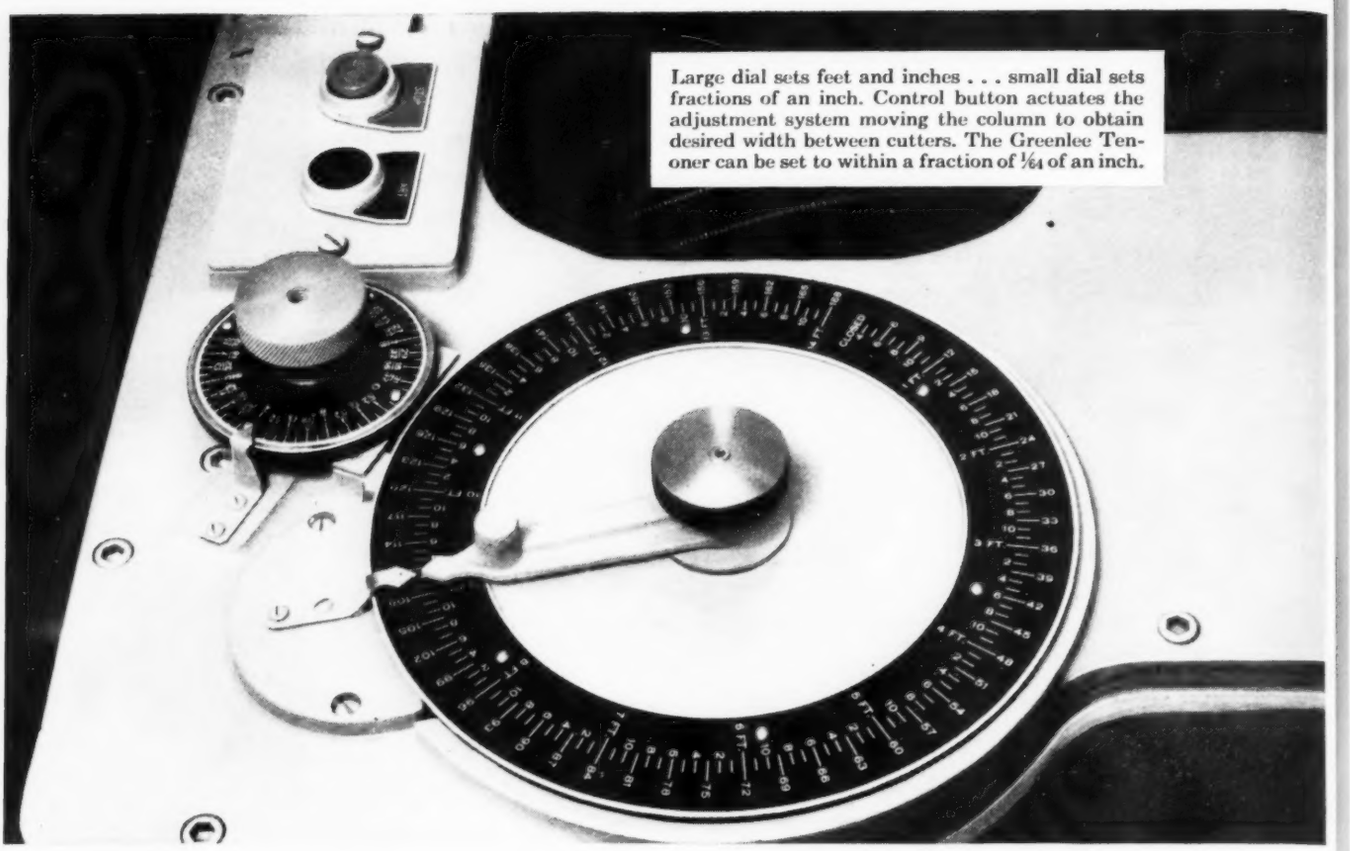
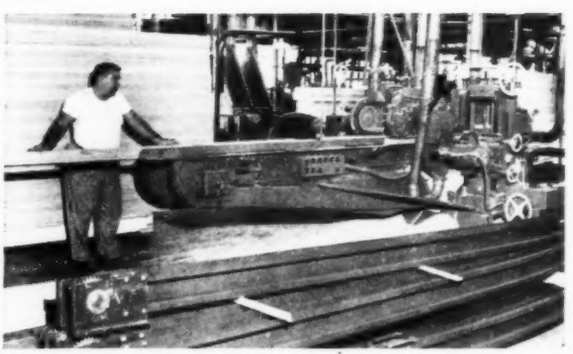


Large dial sets feet and inches . . . small dial sets fractions of an inch. Control button actuates the adjustment system moving the column to obtain desired width between cutters. The Greenlee Tenoner can be set to within a fraction of 1/64 of an inch.

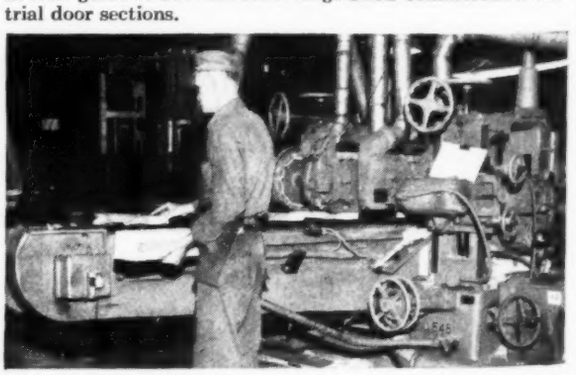
Greenlee Micrometer Adjustments solve major production problem for McKee Door Company

Frequent runs of different sizes of stock caused a major production problem at McKee Door Company, Aurora, Illinois. Down time for machine set-up often exceeded two hours. To increase the output McKee purchased a Greenlee No. 545 Double-End Tenoner. Greenlee's exclusive built in column adjusting system reduced down time to minutes. Cutting accuracy (to a fraction of 1/64") held without variation, even on long runs. Production gains caused McKee to consider an additional machine to further smooth the work flow. A Greenlee No. 542 Double-End Cut-Off Saw was added. For over 10 years these two Greenlee machines have provided steady, dependable, trouble-free service for McKee.

Let a Greenlee representative discuss production problems with you. Write or call today.



No. 542 Double-End Cut-Off Saw — equipped with long in-feed guide to accommodate large sized commercial-industrial door sections.



No. 545 Double-End Tenoner — trims, tenons, and copes stiles for door sections at a rate of 920 pieces an hour.

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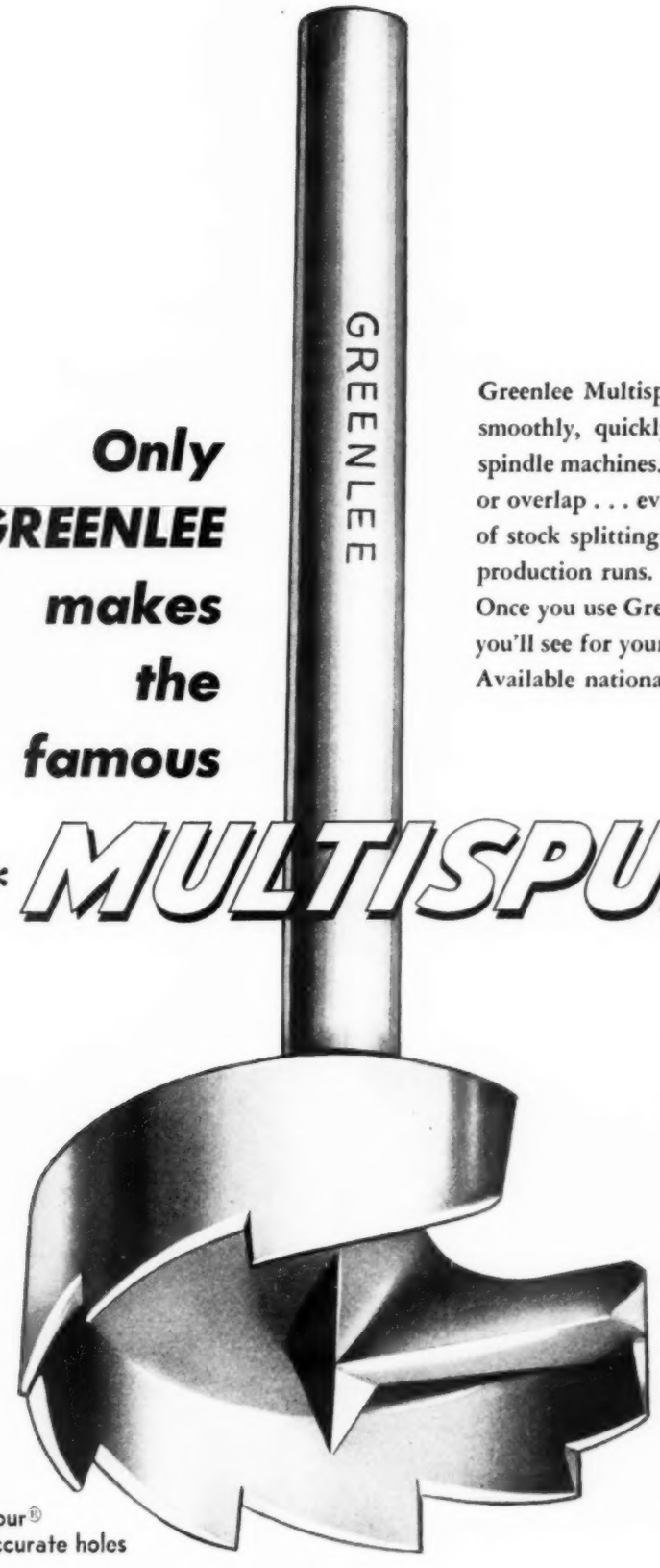

Greenlee Multispur® Machine Bits bore large holes smoothly, quickly, with minimum power on small spindle machines. Multispur® Bits will bore at any angle or overlap . . . even on edges . . . without danger of stock splitting or breakout. Ideal for long production runs. Operate in hard or soft wood. Once you use Greenlee Multispur® Machine Bits you'll see for yourself the proven quality of this fine tool. Available nationally through your tool supply house.

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Unique anti-choke design eliminates chip clogging. Bits operate with a minimum of friction, and require comparatively less power.

High-grade alloy steel is used on all Multispur® Machine Bits. Carefully heat-treated for long life.

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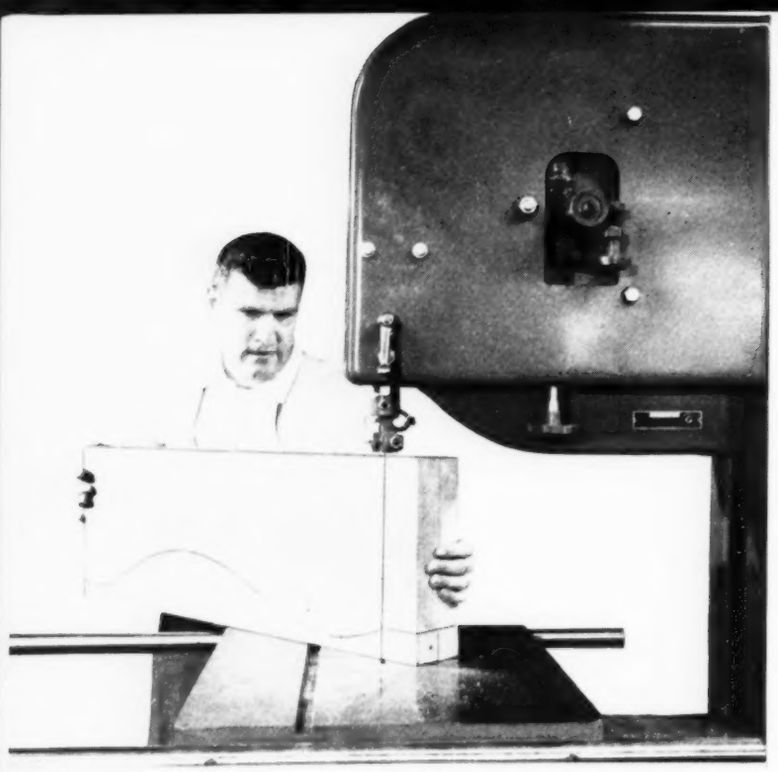

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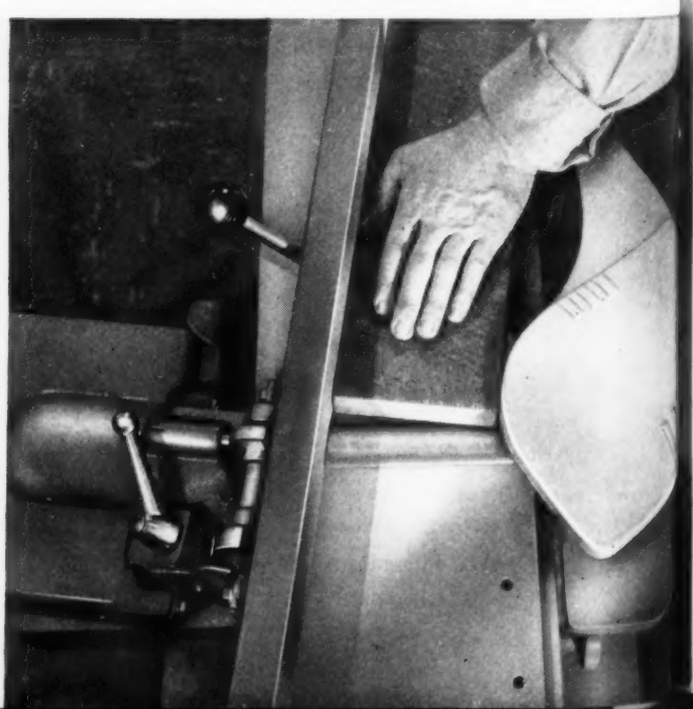

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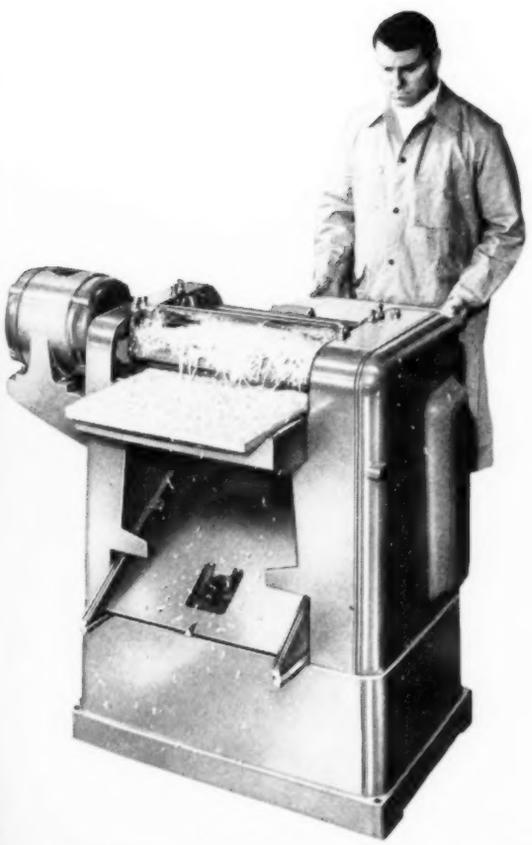

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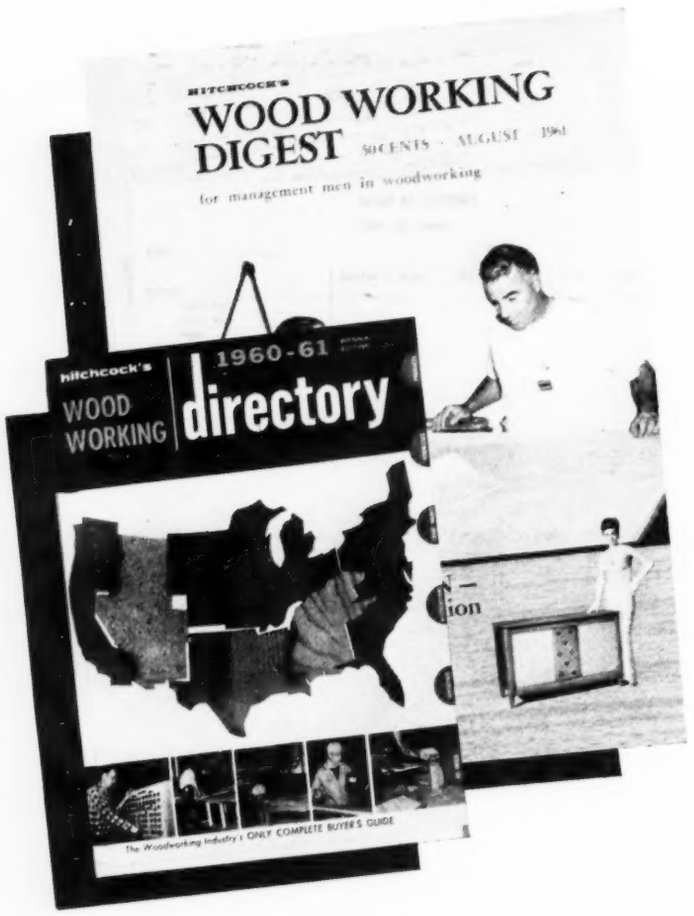

Wood has always played a vital part in our growth and heritage. There is no other basic material available to industry that is as flexible for conversion into useful materials. The future of wood in the next ten years can be as rewarding as it has been in any period in our history if the basic production tools of the wood working industry are modernized.

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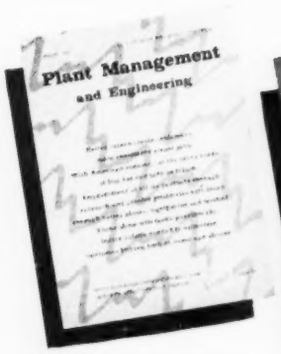

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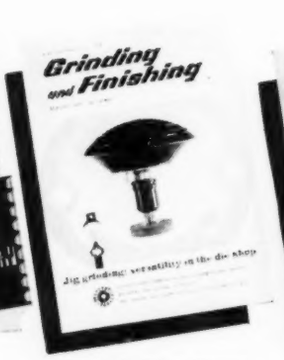

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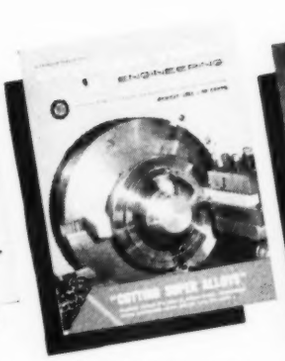

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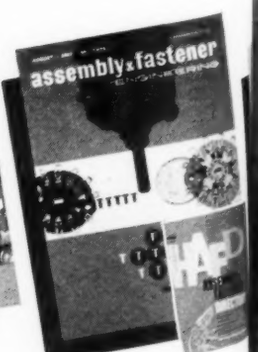

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Today American manufacturers are faced with an industrializing world—that is increasing our domestic competition and winning and controlling world markets.

To meet this economic competition America must develop new and better production procedures. Today abrasive machining is the largest single segment within the metal cutting field. In 1960, 42% of all machine tools sold were abrasive using machines.

American industry continues to realize the economies possible through abrasive machining. Hence, American industry must know the important production facts about these cost reducing and product improving methods.

GRINDING and FINISHING is the only magazine published exclusively for the grinding and finishing industry. Each issue continually motivates American manufacturers to take full advantage of the economies and improved end products resulting from the use of abrasive operations. GRINDING and FINISHING with a circulation of 32,000 serves the industry with the fundamental information on all phases of abrasive machining—"for better production and finishing with abrasives."

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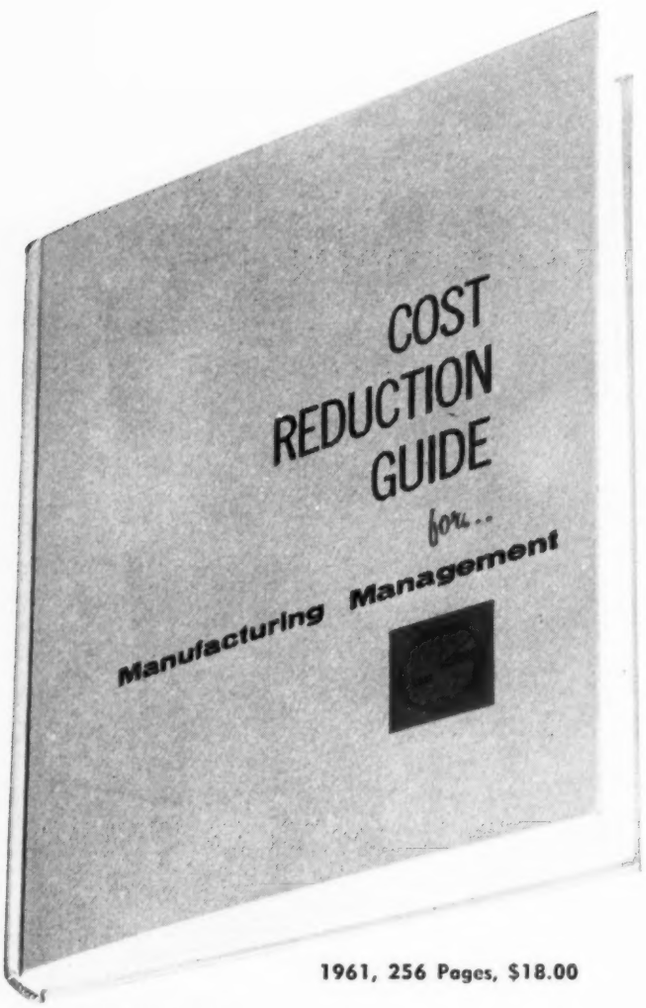

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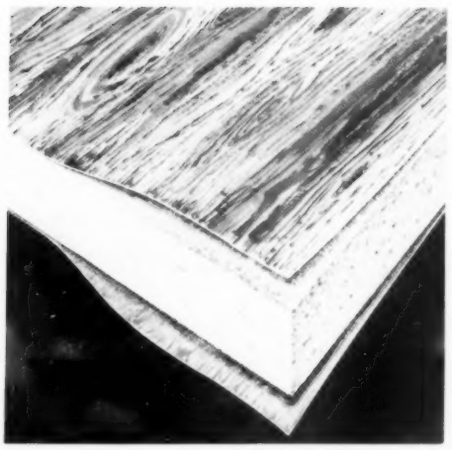

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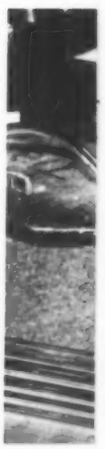

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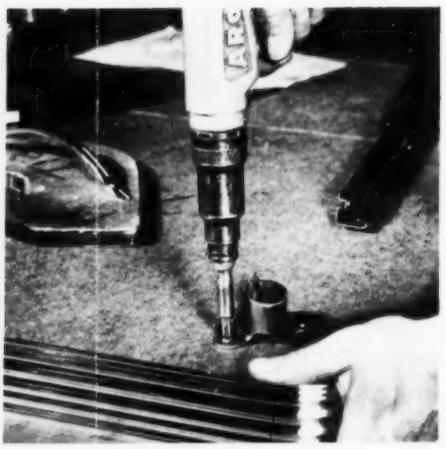

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Formica Flakeboard has the best screwholding power (350 psi face, 335 psi edge), of any particle board. Legs, hardware, and extension mechanisms may be attached directly to the core assembly. You're selling rigidity and stability. You're saving on bars, bracing and other build-ups.

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Men who know wood choose Formica Fla

"We like Formica Flakeboard because of its superior screwholding power which results in the most durable finished product. Void free Formica Flakeboard is also easily machined and eliminates many costly finishing operations. Minimizes waste and holds rejects to a minimum.
"Consistent quality not only insures a finished product of high quality, but also eliminates production delays and relative scheduling problems."

Dawson Flinchbaugh, Gen. Mgr.
Daystrom, Incorporated,
Furniture Division
Olean, New York

"We've switched to Formica Flak
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Carl Hedstrom, Jr., Vice P
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"We've found Formica Flakeboard the best of particle boards. This corestock offers good quality and substantial savings in numerous applications. We recommend it highly to our 3-ply panel customers."

Jim Burnley, General Manager
Hayworth Roll and Panel Co.
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First core material to combine ALL the properties you demand in a quality corestock.

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the cost-cutting Corestock for Fine Furniture

It's an ORIGINAL—not a by-product!

Formica Flakeboard is made from clean, fresh cut flakes. Not chips, splinters, shavings particles or other waste, but flakes from fresh-cut debarked southern pine. These flakes are carefully formed by a precision cutting action that prevents damage to fibres and maintains the high strength properties of the wood.

Flakes are made in two sizes: large, thin ones for the core; fine fibres for the surface. Flake dimensions are scientifically controlled for better uniformity.

Flakes are dried, classified, then treated with a specially developed resin. After treating the flakes are formed into flat boards, which are conditioned, trimmed and sanded. Just prior to shipment, every board is sanded a second time for absolute top quality surface finish.

✶ QUALITY CONTROLLED

Formica Flakeboard is made at Farmville, North Carolina, heart of the southern pine country, in a fully automated plant designed and built exclusively for the manufacture of Formica Flakeboard. Every panel shipped meets Formica's high standards of quality. At Farmville, quality is *built* in, not just inspected in.

✶ SMOOTH SURFACES

Formica Flakeboard is designed as a fine quality corestock and underlayment for decorative laminates and wood veneers. As a result of exhaustive research and development, board faces are made of fine fibres to produce a genuinely smooth surface of uniform thickness, which permits direct veneering and lamination free of unsightly telegraphing of grain, knots, etc.

✶ GREATER MECHANICAL STRENGTH

Formica Flakeboard is a "property-balanced" board. It exceeds the specifications prescribed by the National Particleboard Association and the National Association of Plastic Fabricators. It is without equal in internal bond strength which is clearly reflected in its high screwholding power. Even its moisture absorption characteristics exceed specifications, providing product stability under adverse humidity conditions.

✶ EXCELLENT MACHINABILITY

This outstanding void-free board assures both easier and *better* machinability. Many edge-banding or other finishing operations can be eliminated. Direct finish of machined edges without costly filling or rebuilding is easy with Formica Flakeboard.

Now in 52 standard board sizes

Formica Flakeboard is now available in 48, 36, 30, 25, 24 and 23 11/16-inch widths, 144, 120, 96, 84, 72 and 60-inch lengths (with ample overage). There are 33 board sizes in ¾" thickness alone . . . all at one standard square foot price! And there's a good choice of board sizes in ⅜", ½", ⅝", 1 1/16" and 1 3/16" too.

FREE SAMPLES! Write for yours today. See — touch — test Formica Flakeboard yourself. See for yourself its many money-saving, quality features. Dept. F-50.

FORMICA CORPORATION Cincinnati, Ohio *subsidiary of* CYANAMID

"we have cut finishing costs 17%"

"We manufacture high-grade, solid-maple furniture. So, our finishing operations are very important to us. We want top quality, but we want to save money, too! Since we installed the Nordson Airless Spray System in our factory, we have cut total finishing costs—both labor and material—17%. At the same time, we have improved the quality of our finishing." That is the report of Russell Hall, Finishing Supervisor, Sprague & Carleton, Milford, New Hampshire.

One of the nine Airless Spray stations on the Sprague & Carleton finishing line.

Sprague & Carleton are furniture manufacturers. Their report on the savings from the Nordson Hot Airless Spray System is typical of thousands of users. Furniture manufacturers, metal fabricators, drum manufacturers and reconditioners, and hundreds of other types of industry find their product can be sprayed better, faster, and far more economically with a Nordson Hot Airless Spray System.

Let us show you how our System can make money and improve quality for you. Write for a free copy of our brochure on the Hot Airless Spray System.

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Tough vinyl-impregnated palm with lightly impregnated back repels grease and moisture. Stretchable jersey liner and wing thumb give perfect fit and hand dexterity.

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The Taylor PANEL-FLO Helps Make The Thomasville line of fine furniture

Above: view of new Taylor 88" x 20' Panel-Flo Continuous feed, Steam-heated Edge-gluing Machine equipped with Taylor Mix-Mizer Automatic Proportioner and Mixer for urea resin glues.

Below view at outfeed of Taylor Panel-Flo showing Automatic Sizing Saw in action on two continuously moving lines of glued board.

Photos were taken at Thomasville Chair Company, Thomasville, North Carolina, where the first Panel-Flo ever in production gluing was installed. This leading furniture manufacturer now has two of the latest Panel-Flo Edge Gluers with all attachments, including the Automatic Sizing Saw and Automatic Glue Mixer. Panel-Flos for many years have been very important machines in the modern, up-to-date Thomasville Chair Company Plant.

Why not visit a Taylor "Panel-Flo" user in your vicinity and observe the high quality of glued panels and the obvious savings? List of users will be sent on request.

Investigate and save with a Taylor "Panel-Flo"!

JAMES L. TAYLOR MANUFACTURING CO.

Edge Gluing Specialists Since 1900

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WOOD INDUSTRY

forecast

How will business fare in 1962—what does the next decade hold in store for the wood producing and using industries? Here are the answers to these and many other questions concerning such items as modernization, plant expansion, research and promotion as given by leading woodworking executives whose companies manufacture a wide range of products.

The future of wood holds the promise of much that is good. Just how good the future will be we don't exactly know but everyone has his own opinion based mainly on individual experience. In order to supplement this knowledge we have asked a group of your fellow woodworking executives to share their frank opinions and predictions with you. With a forecast of sales and business conditions, and touching on many other areas of interest, we feel that these opinions are of vital importance to the future of the wood producing and using industries.

The questions asked covered both individual companies and the wood industry in general. In addition to the sales outlook for 1962 and the next decade questions were asked covering the following facets of business: expansion and modernization, research and development, marketing, promotion, and foreign competition.

We hope that the opinions expressed here will give the woodworking executive a better understanding of the problems involved and help him to adequately cope with the future. With a new dedication and confidence in the future we are certain that wood and products made of wood will capture new markets and serve existing ones even better.

"Modernization of our plant and equipment is progressing with a recognition that only through increasing efficiency can we and our employees prosper and be competitive."

H. S. SHEARIN, President,
The Manual Arts Furniture Co., Cincinnati, Ohio.

The attitude of this company on the business outlook is of necessity tied to the conditions in the piano and organ industries which they serve as manufacturers of benches, sheet music cabinets and other wood products sold through piano and organ dealers. In stating his outlook on business Shearin said, "Buoyed up by the increase in defense spending and the general business recovery we feel the sales outlook is excellent for 1962 and the remainder of the '60's."

This optimistic view was qualified by what he calls two brakes on the wood producing and using industries. The first and most obvious in his estimation is that these industries can not expect to receive the percentage of defense dollars that will be received by other industries such as steel, plastics, electronics and others. The second brake pointed out is that plants and methods must be constantly improved if this industry is to obtain its share of the consumer dollar. On this point Shearin said, "Here we are not so much each others competitors as we are of other industries."

Commenting on foreign competition Shearin stated that, "Foreign competition has been felt and has not been dismissed lightly."

However, in favor of the American piano and organ manufacturers Shearin felt that musical values are not always as obvious as the visual values in furniture and that there is a reluctance to abandon products that have had musical merit for generations.

"The wood producing industry should fare very well during 1962 and the next decade. However, we do expect to have some years much better than others."

R. B. PAMPLIN, President
Georgia Pacific Corporation, Portland, Oregon.

One of the giants in the wood industry, Georgia Pacific, expects its 1962 sales to be substantially better than in 1961. This prediction is based on the fact that they feel there will be an increase in building due to the new housing bill and easier money.

Georgia Pacific has just completed a five year program of modernization and new facilities that will permit the best possible utilization of its timber. This program will continue but not to the same extent, Pamplin indicated.

In answer to a question of industry wide interest, Pamplin stated, "Research and development will play an important part in our new products. We have several new products that have great promise, which are just now coming on the market. The wood industry does need strengthening in this field and we are doing considerable work in this connection."

On the point of foreign competition Pamplin felt it is not too serious a factor in the woodworking industry in general although a great deal of plywood is being imported—some by his company. Balancing this in the over-all picture are the dollars gained that come back to us when logs and lumber are purchased.

In a study made some years ago by the late Dr. Charles Roos, it was pointed out that in every period of 20 years over the last 200 years, standing timber has increased in value. Based on this Pamplin stated, "We at Georgia-Pacific are very bullish about the timber industry."

"Research and development in the furniture industry will become more important in the next decade than it has been in the past."

D. L. KROEHLER, President,
Kroehler Mfg. Co., Naperville, Illinois

Continuing on the subject of research and development, Kroehler stated, "Not only are many new wood products and finishes being developed but new fibers for fabrics and new cushioning materials are coming out of the experimental stage with increasing frequency. We test all new materials and study them for possible application within our own research department."

An increase in sales was forecast for his company in 1962 by Kroehler, and that the next decade would see a 30% gain over the peak year of 1957. He based these predictions on consumer requirements stemming from World War II that have not been fully realized because of two economic recessions and the twenty million new family units that will be formed in the next ten years.

In answer to the question of how the wood industries will fare Kroehler made the following remarks, "Wood producing and using industries should experience substantial gains during the next decade. This could be particularly true for furniture producers if they put forth the effort to realize the potential."

Following this he cited a seven to ten year lag from a boom in housing until home owners are ready for new furniture. This means that the volume of home building in the early 1950's should be reflected soon in sales.

On expansion and modernization, Kroehler mentioned the extensive modernization and expansion of the past five years by his company that has broadened their production capabilities at all producing plants.

Kroehler brought out the fact that the furniture industry had not been doing a satisfactory job in stimulating consumer interest in its products. He said, "It is vital that we counteract the homemaker's apathy toward home furnishings. I believe this can be done through joint activity on the part of major home furnishing manufacturers, in areas of collective advertising, merchandising and sales promotion."

"The wood producing and using industries should fare relatively well and I say 'relatively' because I feel that other industries that are using materials that can be substituted for wood are doing a far better job still in advertising, promotion, publicity, etc."

ROBERT K. MORGAN, President,
Morgan Manufacturing Co., Inc., Black Mountain, North Carolina.

"Unless the wood producing industry as a group establishes a closer relationship in working together for the promotion of wood use, they are bound to lose a certain percentage of the potential over-all business," was a further comment on the state of our industry by Morgan whose company is a major supplier of wood parts to the furniture industry.

As to his company's plans on expansion and modernization Morgan explained that they were not very large and stated, "The main reason is that we have not at any time lagged in keeping our plant modernized in facilities. Therefore, on a year to year basis we will continue to do this."

In this same area of expansion, Morgan stated plans are being made to produce and sell fully machined plywood parts as well as solid wood parts. Other fields are also being entered for the first time and it is in this area of additional diversification that he felt extra expansion and modernization might be required.

"The research and development in the furniture industry, in my own opinion," says Morgan "has been practically nil." This, he felt, could be corrected by working together in groups and organizations such as the Southern Furniture Manufacturers Association or the National Association of Furniture Manufacturers. While his own company has done some research in various fields he felt the average furniture plant does not have the money, time, or personnel to put into research and development. The need to improve the picture cost-wise and quality-wise was also brought out by Morgan.

He cited the need for improvement of finishing methods as well as finishing materials that will give a better product at a much lower cost. This he felt could be solved by better user-supplier cooperation.

"Foreign competition is serious" in the words of Morgan although there are limiting factors not yet being met by foreign furniture producers. Also in the area of foreign trade he felt that a greater use could be made of imported woods if we learn to overcome problems these woods present in manufacturing and especially in finishing.

"We believe that the future of wood is the brightest it has been in many a year."

H. W. ECKARDT, President,
Morgan Company, Oshkosh, Wisconsin.

Mr. Eckardt conditioned this statement as follows "Provided, however, that everyone of us in the industry contributes time and money to the good of the cause—time and effort and money on research, development and sales promotion." Expanding further on his opening statement he said that "this includes the unqualified support of everyone of us for our trade associations and the programs of wood promotion they now have under way."

Unity of purpose and unity of effort were emphasized by Eckardt as were research and development and product promotion. These points have always been backed up by the Morgan Company, one of the leading producers of woodwork for the home.

Their plant expansion program started several years ago and which they plan to enlarge on in 1962 gives proof of the Morgan Company's faith in the future and their own ability as a woodwork producer.

We feel that Eckardt's closing thoughts are extremely good and can be used as a creed by everyone in the wood industry. "It is a pleasure to sell wood—it is a pleasure to own wood—because wood has so much that is good to sell and to own."

"Using realistic weather vanes, all indications point to a better demand and balance in sales for the wood producing and using industries in 1962 and the next decade."

P. B. SHOEMAKER, Executive Vice President,
Masonite Corporation, Chicago, Illinois.

This forecast by Shoemaker is based on a predicted upturn in new housing starts due to the 1961 Housing Act. A substantial uptrend in both residential and commercial modernization brought about by favorable FHA terms will also contribute to better business.

"New research and product development is taking place and will continue at a higher tempo," stated Shoemaker.

Expansion and modernization for the immediate future at Masonite will be moderate because of the improvements made recently that increased production 25%. However, Shoemaker pointed out that long range expansion would be dictated by new product development and the total economy.

Shoemaker summed up the standing of wood with this statement, "A greater acceptance is developing because of concerted industry action in educating the public on the benefits of wood. Its beauty, warmth and functional economy are continually being pointed out." He also brought out the publicity and advertising that has been telling the value of home ownership—this will lead to a greater use of wood.

According to Shoemaker foreign competition is serious to both plywood and hardboard. It affects not only our production potential but also our consumer purchasing ability.

"Wood, as a material, has proved itself throughout the ages and it is up to the resourcefulness of men to employ it in countless new ways."

G. B. EHNBORN, President,
American Wood Working Company, Montello, Wisconsin.

Wood, to Ehnborn, is a combination of utility and beauty that is only limited by man's knowledge and imagination. The American Wood Working Co., supplies wood turnings to hundreds of users in a wide range of industries. As to the future of the wood industry, he believes it is facing an era of growth. His own company recently moved into a new building containing a dry kiln and sawmill.

"We are always," said Ehnborn, "looking into new uses of wood, new equipment, and trying to improve service to our customer." We believe that a more thorough understanding of wood properties will enable engineers and designers to employ wood more frequently in testing, program design and technical application."

To further emphasize the need for a better understanding between the wood supplier and producer of finished products Ehnborn stated, "Sometimes a job is lost because a costly wood has been specified when a more plentiful wood could do the job."

Ehnborn's company has made good use of the nearby Forest Products Laboratory at Madison, Wisconsin. He also indicated that they work closely with their customers in product testing. Sharing their experience in design and application has developed many new products and customers.

L. A. MARTIN

The author has had over twenty years experience in the coated abrasive field, and is the woodworking specialist in Abrasive Technical Services for the Coated Abrasive and Related Products Division of the Minnesota Mining and Manufacturing Company (3M).

COATED ABRASIVE KNOWLEDGE your key to quality, lower cost. (part II)

Accelerated developments in woodworking abrasives and abrasive machinery during recent years have made possible tremendous benefits to the user in terms of quality and lower production costs. In this, the second article by L. A. Martin, the author discusses important developments including: resin bonded coated abrasives, coated abrasive wheels and nylon web containing abrasive minerals. Many new developments in abrasive machinery are also highlighted here.

In recent years there has been an acceleration in developments of woodworking abrasives and abrasive machinery which cannot be matched in any like period in the past. Manufacturers of furniture, millwork, plywood and board products, etc., have reaped tremendous benefits from the standpoint of quality or cost, or both. Many of the developments can be attributed to the sincere efforts of numerous woodworking plants working in close relationship with manufacturers of coated abrasives and abrasive machinery, in solving sanding problems through the application of modern abrasive technology.

For example, because of a change in type of abrasive, a given size belt now produces for 16 hours as against 4 hours for the type previously used. A new straight through feed sander sands stock at a speed of 100 lineal feet per minute, compared to 12 feet per minute for the old manual method. Or a single machine will do the same job in one pass as two or three other types of machines do in multiple passes. In many cases, a bonus in the form of superior quality is included in the more economical method of processing.

Resin-Bonded Coated Abrasives– An Important Cost Cutting Factor

Without question, an important cost cutting factor in the sanding of wood has been the ever increasing use of resin-bonded coated abrasives. The additional cost of 10 to 20% compared with otherwise similar gluebonded products still deters many manufacturers from purchasing resin-bonded abrasives. The cost difference becomes insignificant when consideration is given to the increase in abrasive life of from 25% to 200% and more.

Exceptions to the recommended use of resin-bonded products for woodworking plant operations would be:

1. If the nature of the material being sanded is such that premature loading of the mineral coating with

residue precludes taking advantage of the stronger bond. Examples are drawer sanding or other operations where glue in the material being sanded loads the abrasive, sanding wood with an extremely high resin or pitch content and sanding finishing materials either for smoothing or reclaiming rejects.

2. Since resin-bonded abrasives are inherently less flexible, certain sanding operations require the use of the softer bodied gluebonded products in the interest of conformability. Examples are some mold sanding, pneumatic drum and hand sanding operations.

3. Extremely fine grits of abrasives where no great benefit is derived from the greater strength of resin bonds.

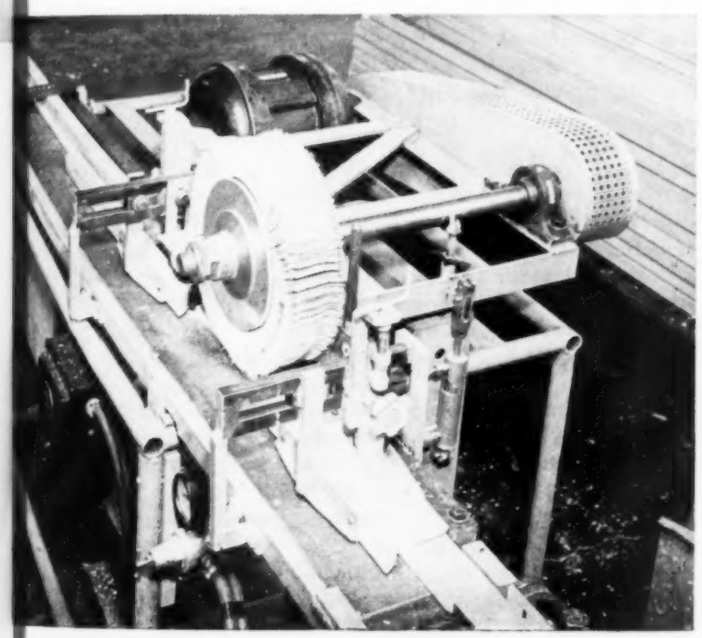
Because the backings of most resin-bonded coated abrasives are hygroscopic and the adhesives or bonds relatively non-hygroscopic, there is a tendency for this type of coated abrasive construction to cup. The mineral side may be either in or out, depending upon the amount of moisture in the backing. Although this condition is not a problem in many sanding operations, it may be intolerable in others such as stroke sanding where cupping in one direction causes the edges of the belt to cut into the workpiece and in the other direction into the sanding shoe. In some cases, cupping may be so extreme as to prevent application of the shoe to the back of the belt. This problem has been solved at least partially in the past by flexing of the belt while it is running (by forcing a sharp edged tool against the backing), the application of moisture to the backing or extension of the vertical machine member which attaches the shoe to the carriage to force out the cupping. However, a newly developed aluminum oxide resin-bonded cloth backing abrasive product has sufficiently reduced shape activity to eliminate the need for other corrective measures. This product is gaining increasing acceptance for operations such as stroke and mold sanding where cupping is a problem.

Aluminum-Oxide Coated "J" Weight Backing Product—Another Development

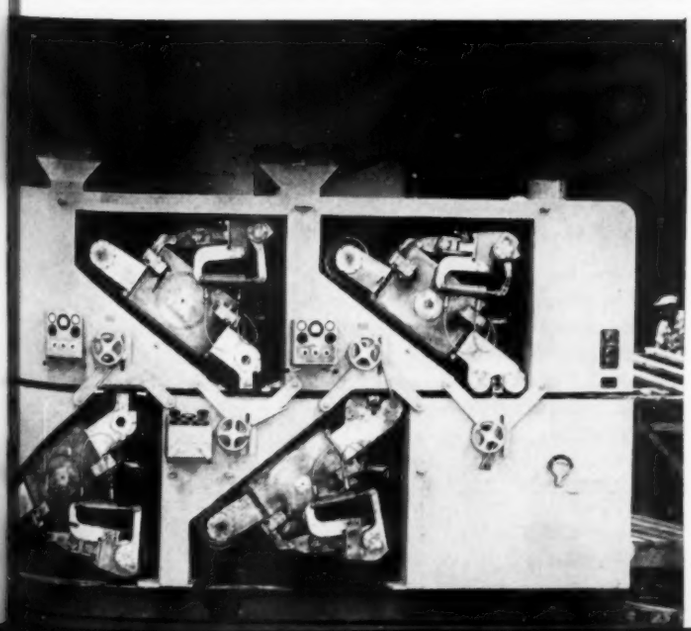
Another development in the resin-bonded product line is an aluminum oxide coated "J" weight backing product, which will do twice as much or more work as the older products of this basic construction. In addition to high resistance to high adhesive breakdown, characteristic of resin bonded products, the new product does not load with sanding residue as readily as the older products. It also is more flexible. This product truly has design features which are conducive to extremly long life in wood abrading operations.

Coated Abrasive Wheels

Although not new to many users of coated abrasives, coated abrasive wheels are being used with increasing frequency in the woodworking industry. Essentially, these wheels are made by adhering hundreds of rectangular pieces of coated abrasives to a core or hub. Wheels are available in garnet, silicon carbide and aluminum oxide mineral and in various widths and diameters.

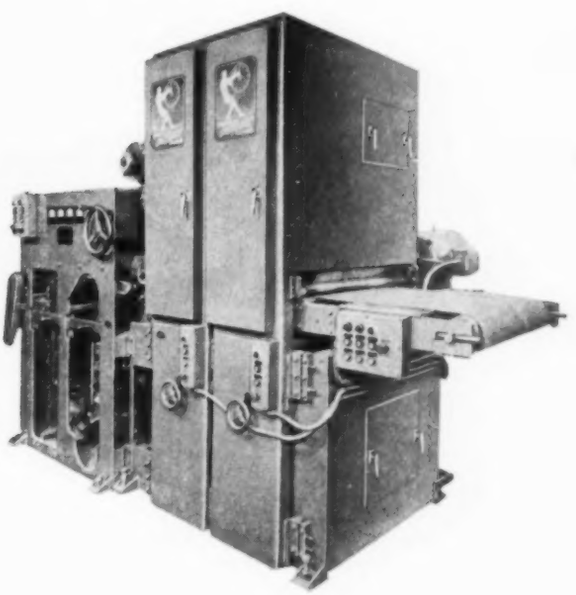


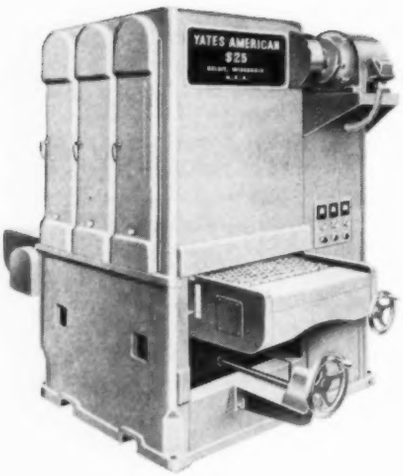
Coated abrasive wheel used on a homemade mold sander.



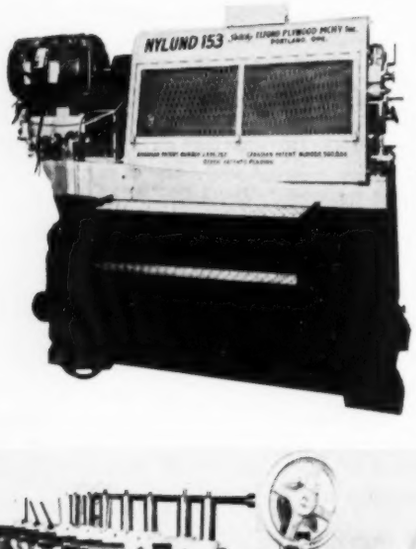
Smithway four-head wide belt sander.

Timesaver TBS-30 wide belt sander has two heads top and two heads bottom, with dual-action platen on second heads and conveyor belt extension.



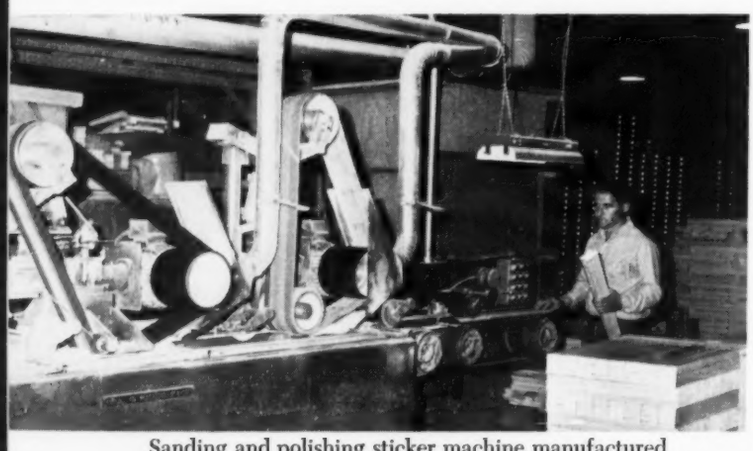


Yates-American S-25 wide belt machine.



Nylund wide belt conversion unit.

Critz Model 200 automatic edgeshape sander.



Sanding and polishing sticker machine manufactured by Mitchum & Schaefer, Inc.

Abrading is done with the tips of the leaves, which bend slightly when in contact with the workpiece. The sanding scratch produced is approximately the same as that of a supported abrasive belt two grades finer. In spite of its relatively soft-cutting action, wheels in coarser grits are capable of considerable stock removal.

Initial attempts to apply this wheel to wood operations included sanding intricate moldings with wheels preformed on the periphery to fit the molded shape. These attempts generally failed because the wheel was unable to maintain the exact shape in the molding. In the last few years, this coated abrasive product has found its place in sanding simple moldings and flat edges. Fitted to the outfeed end of a molder or the cope heads of a tenoner, it has been instrumental in cost savings through the elimination of separate sanding operations.

Advantages of this abrasive tool are: Small cost of associated machinery resistance to loading of the abrasive resulting from the flexing of the flaps, and resiliency, which is desirable in some operations.

Nylon Web Containing Abrasive Minerals Offers Many Advantages

A very recent addition to the many types of products used in the wood industry is a nylon web containing abrasive minerals. Unlike coated abrasives, this material is open, porous and very conformable. It is available in various types and grades of mineral and converted into sheet, roll or wheel form for a variety of abrading operations. Because the abrading action is very light compared with a coated abrasive of the same grade, the application of this material is used both by hand and on oscillating machines to sand sealer coats and to rub topcoats to produce satin finishes. Sheets have proved to be an excellent form for some sealer sanding operations on sharply curved surfaces because of the ease of holding in the hand and the reduction in edge cut-throughs.

Top coat rubbing is being accomplished with the very finest grits, which generally are used with reciprocating rubbing machines. The advantages in using this product to produce satin finishes are economy and improved quality of finish through greater uniformity of scratch pattern. Finish reflectance may be varied through the use of different grits of waterproof abrasive paper for the primary rubbing or leveling and by using the nylon material dry, with rubbing lubricants of various viscosities or with an oil and pumice slurry.

In wheel form the material lends itself nicely to the straight through feed type of operation so common in pre-finishing plywood panels and cabinet doors. Production experience in excess of two years in some plants indicates a very definite place for this form of the product to remove raised fibers in the whitewood, sand sealer or washcoats and produce satin finishes.

Wheels for these operations are generally 12 to 14 inches in diameter and up to 62 inches in length, although they are available in larger or smaller sizes. As with sheet form material, advantages are found in both economy and quality of work. Economy results from resistance to loading and progressive dressing of the wheel to expose fresh particles of mineral to the work. Experience in production indicates a life expectancy of many months for the wheels.

Some Significant Developments in Abrasive Machinery

Although there have been new developments in wood abrading machinery for many types of operations, the most significant improvements have been made in wide belt sanders, mold or edge sanders and sanders or polishers utilizing the nylon web finishing material. New developments in machinery are not limited to those discussed in this article. My objective is to emphasize that definite progress is being made in the improvement of equipment in the interest of reducing production costs.

Wide Belt Sanders

A wide belt sander generally is described as an abrasive belt machine utilizing belts 12 inches wide or wider and having a straight through type of feed bed. The first wide belt sander was introduced to industry approximately 25 years ago and initial usage was almost entirely in the metal industry. Almost all the wide stock being sanded in the woodworking industry was being sanded on multiple drum sanders. Apparently woodworkers did not move as rapidly into the use of the wide belt because they were well equipped with multiple drum sanders, the cost of early wide belt equipment was quite high and the finishes produced did not satisfy requirements.

In the early 1950's manufacturers became aware of the need for a nominally priced wide belt machine for the woodworking industry. These early machines using belts up to 50 inches wide filled a great need in the decorative plywood paneling industry. By arranging a number of machines in tandem for a sequence of abrasive grits, it was possible to size and finish sand wall paneling at feed speeds in excess of 50 FPM. In the past ten years the use of wide belt machines has progressed from the sanding of non-critical parts to finish sanding in the furniture industry and from the relatively light sanding of patches to primary sanding in the Fir plywood industry.

There now are at least ten manufacturers of wide belt machines in the United States, plus a number of foreign manufacturers. All supply equipment to the woodworking industry. Some make higher powered machines only. Others produce lower powered machines with single heads. And there are a few who supply both. Smaller machines with single heads using 12 inch wide belts are obtainable at prices as low as $2,000. Larger machines using belts up to 66 inches wide with a multiple of heads for sanding both top and bottom surfaces and up to 125 horsepower motors on each head cost $60,000 to $70,000.

As previously stated, it is not possible to describe all of the wide belt equipment available today. Only a few machines will be covered as examples of new configurations in equipment or new applications. In some cases, other manufacturers are designing or manufacturing similar machines for like applications.

Four-Head Wide Belt Sander

An example of a new application for a proven machine design is the four-head wide belt sander manufactured by the Smithway Machine Co., Seattle, Washington. It has proved its capabilities in sizing and finish sanding particle board. A machine of this type recently was installed in a Fir plywood plant for the primary sanding of Douglas Fir plywood, an operation now performed almost exclusively by eight drum sanders. This machine, which can utilize belts up to 66 inches wide, has a steel contact roll for rough sanding and a sanding platen for finish sanding on each side of the plywood panel. Using grit 50 or 60 resin-bonded cloth belts on the roughing heads and grit 120 resin-bonded cloth belts on the finish sanding heads, 0.050 inch is being removed in one pass at a feed speed of 80 FPM. With the installation of an automatic grading line, the feed speed of this machine will be increased to 125-150 FPM, and it is anticipated that the entire installation will be operated by two men.

Multiple Head Wide Belt Sander

TBS 30 Model by Timesavers Sanders, Inc., Minneapolis, Minnesota, is a good example of a multiple head wide belt sander for sanding furniture parts. This is a 30-inch-wide machine capable of sanding both sides of a panel with a two grit abrasive sequence. The first two sanding heads (roughing) are equipped with contact rolls for a belt backup and the two finishing heads are equipped with a combination of contact roll and sanding platen. The roughing heads have 30 HP motors and the finishing heads 20 HP motors. Both the contact roll and the platen on the finishing heads back up a single belt.

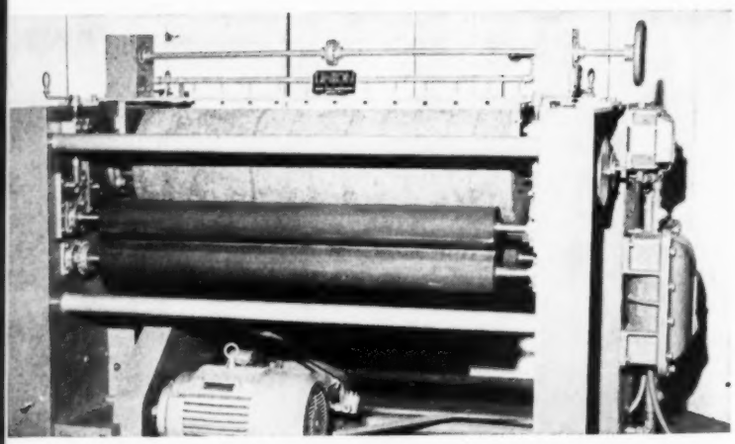
A unique and very desirable feature of the sanding platen is its precise adjustment for changing platen sanding pressure. In the extreme, it is possible to adjust the platen to a position where the contact roll only is backing up the belt or where the platen alone serves as a backup. The platen, of course, makes it possible to produce a long scratch which is so desirable in the interest of a quality whitewood finish. The use of a sanding platen for belt backup has proven to be a basic requirement in wide belt sanders for finish sanding in the furniture industry.

Using grit 60 belts on the roughing heads and grit 100 on the finishing heads, both in resin-bonded aluminum oxide cloth belts, 1/32 inch is being removed from each side of Oak drawer sides and backs at a feed speed of 100 FPM while maintaining a tolerance of plus or minus 0.002 inch. Machines of this type may be obtained in any width from 18 inches to 66 inches and with any number and combination of top and bottom heads.

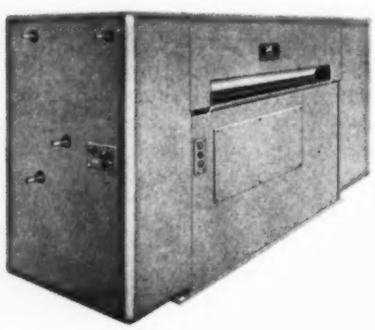
Three-Head Wide Belt Sander

Following the excellent results obtained with their wide belt sander using belts up to 54 inches wide, the Yates-American Company of Beloit, Wisconsin, recently introduced a narrower model using 25 inch wide belts and identified as the S-25. Like the wider model, the new machine is a top sander having three sanding heads. The first two heads accomplish reduction of the stock to desired thickness and the last head produces a high quality finish.

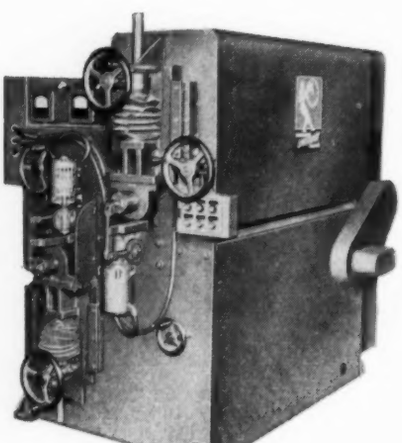
Sanding platens provide belt backup on all three sanding heads. If desired, this machine may be obtained with either one or two heads. The feed speed is variable from 20 to 60 FPM. Through the use of the three belt sequence for heavy stock removal with the final belt producing a finish comparable to that of a stroke sander, it is possible to replace the conventional combination of multiple drum sander and stroke sander in many operations.



Uni-Finisher machine produced by the Union Tool Corporation.



Yates-American S-101 polishing machine using nylon web finishing material.



Timesaver TBSB 50 Speedbuffer

Wide Belt Conversion Unit

A new Nylund wide belt conversion unit designed to convert endless bed drum sanders to wide belt sanding, has been developed by Elford Plywood Machinery, Inc., Portland, Ore. This new unit offers all of the exclusive sanding and operating features found in their Model 153 wide belt sander including the off-set contact roll for stock removal and the patented smoothing bar or sanding platen for fine finish using a single abrasive belt with a single pass through the machine.

The conversion unit is adaptable to the endless bed section of most models of endless bed drum sanders, and can be installed with a minimum of downtime. In one plant it is being very successfully employed for patch sanding of Fir plywood using grit 80 abrasive belt. At a feed speed of 60 FPM it cuts down the patches and removes 0.010 inch of stock over the entire panel surface with a tolerance of plus or minus 0.002 inch.

Automatic Edgshape Sander

The Critz Model 200 automatic Edgshape sander is another recently developed machine which exemplifies the trend toward automation in sanding operations. Through the use of an endless feed bed and a constant sanding pressure mechanism, the variables inherent in manual control are eliminated. This provides a uniformity which is highly desirable from a quality standpoint. The rate of production of this sander has proven to be four times faster than older methods for sanding edges and easing the top and bottom edges of veneer banded tops and ends. With the shaping attachment, both shaping and sanding can be accomplished with one pass through the machine. The abrasive belt part of the equipment may be tilted to more readily accomplish sanding of the various edge shapes.

Sanding And Polishing Sticker Machine

Another new sanding machine with tremendous potential for cost saving is the Sanding and Polishing Sticker Machine produced by the Abrasive Machinery Division, Mitchum & Schaefer, Inc., Indianapolis, Indiana. The unique feature of this machine is that it will sand more than one side of a piece of stock in a single pass, including mold sanding of one or more sides. This is accomplished through a multiple of belt sanding heads orientated in accord with the surfaces to be sanded. For sanding more critical areas, a sanding shoe or platen is used to back up the belt and for less critical areas, a contact roll. Machines are available for sanding 4, 6, 8, 10 and 12 inch widths and standard thickness adjustment is 4 inches through micrometer screw setting. The sticker sander is of unitized design, thereby permitting the addition of more sanding heads if the need arises. Through the elimination of multiple drum, stroke and hand block sanding operations on rails in one plant, the use of this machine has resulted in a 75% reduction in man hours.

Machines Employing Wheels Of Nylon Web Impregnated With Abrasive Minerals

The three machines employing wheels of nylon web impregnated with abrasive minerals (pictured on this page) have thoroughly proven their effectiveness in industrial operations. Whether it be whitewood, finishing material coatings or other materials, the work accomplished is essentially the removal of fibers and foreign matter from the surface of the material. The Union Tool Corp., Warsaw, Ind., Uni-Finisher and the Yates-American S-101 polisher are single side top sanders and the Timesaver TBSB Speedbuffer is a two side sander. Provisions have been made in the design of these machines to compensate for wheel wear by increasing the arbor speed as the wheel wears through use. Wheel oscillation is also provided in the interest of more aggressive action, resistance to loading and elimination of streaking.

EDITOR'S NOTE

The first of a series of two articles on the subject "Coated Abrasive Knowledge, your key to quality, lower cost," by the author, L. A. Martin, appeared in the September, 1961 issue of Hitchcock's WOODWORKING Digest, on pages 40-45.

SOME USEFUL HINTS ABOUT CHIPBOARD

by VIVIAN BIRD, of Pinner, Middlesex, England

Some useful hints are given by the author concerning chipboard, including machining practices and precautions to be taken, based mainly upon French and German experiences.

Wood chipboards and flaxboards are now being used increasingly in the furniture industry. It is an excellent material which, on the whole, does not introduce special problems but for satisfactory results certain practices are best observed. The following contains some general hints which should be of value to all concerned.

When machining wood, chipboards and flaxboards, practical experience suggests it is best to use carbide tipped tools for long production runs. The cutting speeds and angle are important.

Circular Saws: The cutting angle should be between 10 degrees and 15 degrees. Teeth should be thin, ⅛ inch or 3/16 inch, and there should be a bevel on the tooth. The cutting speed should be fast, about 12,000 ft. This means that with a spindle speed of 3,200 rpm, a 14 inch diameter saw, with 60 teeth should be used. If faster spindle speeds are available, it is possible to use smaller diameter saws with less teeth. For instance, with 3,800 rpm, a 12 inch saw with 52 teeth would be suitable. It is important that the workpiece is well supported and that the saw should be kept as low as possible, not more than 1½ inches above the board and even as low as ½ inch, to obtain a very clean cut. The rate of feed depends on the type and density of the board and also on the spindle speeds; that is, higher feed speeds should be used for lower density boards. With fast tools, it is possible to feed the board up to 50 ft. per min. The tool should be resharpened after a run of 40,000 ft.

Spindle Moulders: High cutting speeds are again recommended, with spindle speeds between 6,000 and 10,000 rpm. Four cutter tools are suggested, for spindle speeds of 8,000 –10,000 rpm and a tool diameter of 4½ inches. For speeds between 6,000 –8,000 rpm, a tool diameter of 5½ inches is recommended. If a slower spindle speed must be used, it is possible to obtain relatively good results by increasing the diameter of the tool and by reducing the feed speed, or by increasing the number of cutters to six. For instance, with a spindle speed of 4,000 rpm, a tool diameter of 7-8 inches should be used. The cutting angle should be between 15 and 18 degrees, and oblique cuts will improve the quality of the work. The feed speed with fast tools can be up to 25 ft. per min.

Routers: Very high speeds tend to damage the tools. It is, therefore, preferable to work with a lower speed; i.e., 18,000 rpm, using a single cutter bit, particularly when the tool has been recently sharpened. After certain blunting of the tool, it is possible to increase the speed to 24,000 rpm. According to experiments carried out in France, the best results are obtained with 14,000 rpm using two or three cutter bits, with diameters between 9/16 inch and ⅝ inch.

Drilling: Drill bits should be as short as is conveniently possible. They should be of the two-cutter type with a center point. The recommended drilling speed is from 3,000 to 6,000 rpm.

Veneering: Veneers must be dry, preferably too dry rather than too damp. The humidity should never be over 8 percent at the moment of pressing, and it is better to use veneers at 6 or 7 percent. Aging tests carried out on veneered chipboards have shown excellent results after 1 year, when the veneers were between 4 percent and 6 percent humidity. Very fine cracks began to appear with veneers at 8 percent and very bad results were obtained with veneers at 12 percent humidity at the time of pressing.

When a veneer kiln is not available, veneers can be made sufficiently dry by placing them in small packs of four or eight, according to their thickness, between the heating plates of a veneer press, and then making this "breathe" alternately up and down for a few minutes. In addition to drying, this will flatten the veneers and give easier handling when jointing.

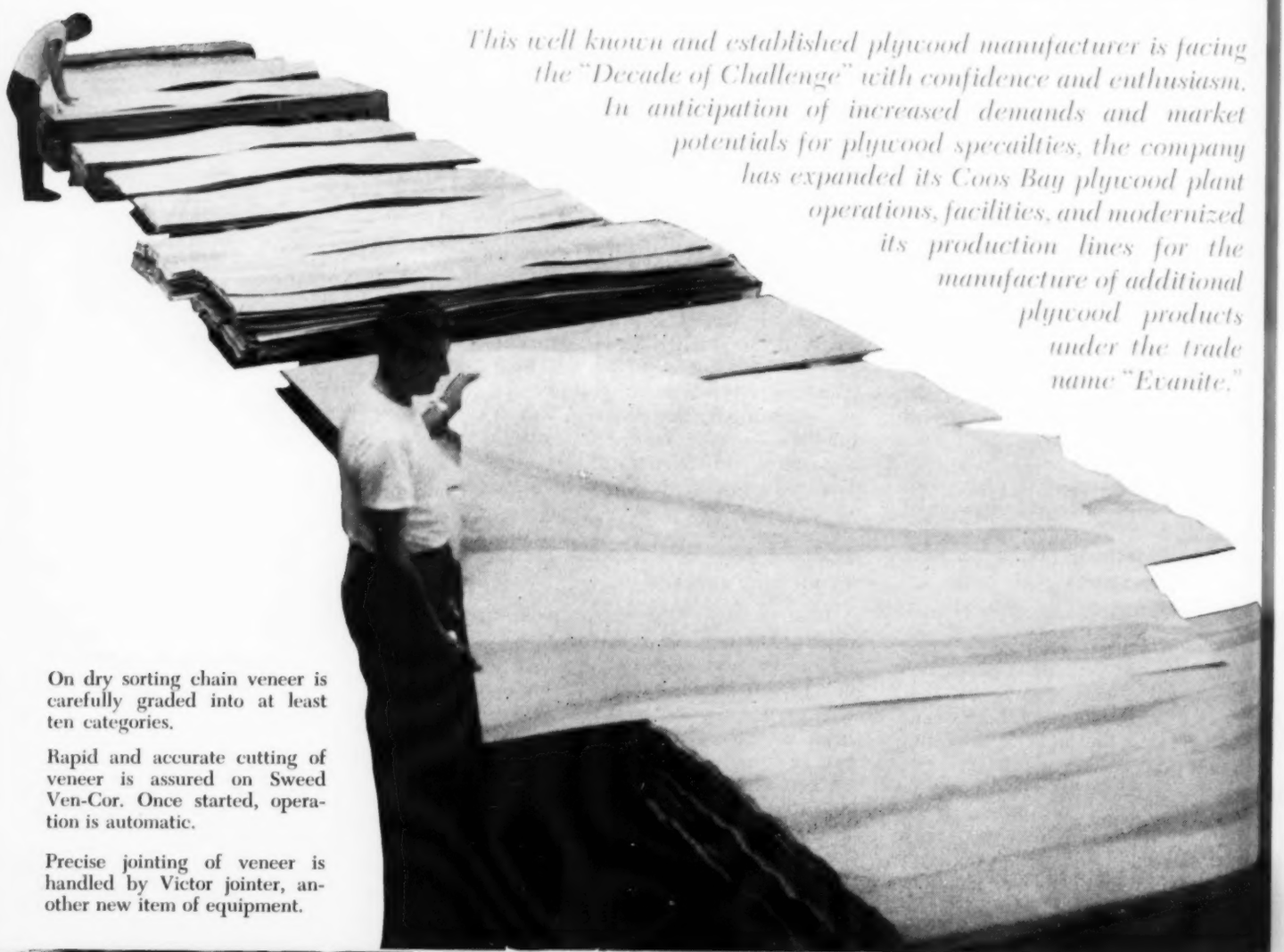
After veneering, it is necessary to stabilize the panels because of the humidity introduced by the adhesive and this is best done by piling the panels flat, one exactly on top of the other (without sticks), and leaving them for at least 48 hours in a room at normal temperature. This should not be accelerated by using higher temperatures. When the adhesive used contains much water, this conditioning may have to be extended from 3 to 6 days. It is, therefore, advisable to use an adhesive with the minimum of water and to ensure an even and thin glue line. The application of adhesive by roller coater is preferable as the amount of adhesive can be controlled accurately. When using resin adhesives a recommended quantity is ½ oz. per sq. ft.

Veneering panels with solid lipping: To avoid "show through" at the joints between chipboard panels and solid lippings, when using the decorative veneers, special precautions must be taken. It is most important that the board and tipping are at the same degree of humidity when being glued. The adhesive used should not contain water and the planing and sanding of the lipped panels should be done only after the adhesive has completely dried. The order of operations should, therefore, be: (a) the lipping should be glued and set; (b) a period of drying to stabilize the humidity introduced by the adhesive; (c) lippings should be planed to thickness; (d) the panels should be sanded on both sides by a drum sander; (e) veneer as described above.

Plywood Specialties increase production, sales potential

by BERT GOLDRATH, West Coast Editor.

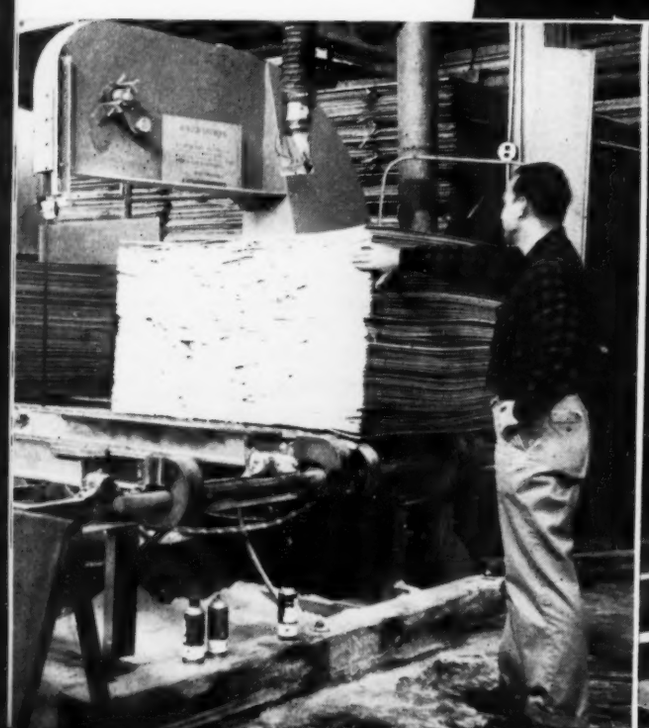
This well known and established plywood manufacturer is facing the "Decade of Challenge" with confidence and enthusiasm. In anticipation of increased demands and market potentials for plywood specailties, the company has expanded its Coos Bay plywood plant operations, facilities, and modernized its production lines for the manufacture of additional plywood products under the trade name "Evanite."



On dry sorting chain veneer is carefully graded into at least ten categories.

Rapid and accurate cutting of veneer is assured on Sweed Ven-Cor. Once started, operation is automatic.

Precise jointing of veneer is handled by Victor jointer, another new item of equipment.



The Evans Products Company, manufacturer of "Evanite" plywood products, has expanded its production facilities and operations at their Coos Bay plywood plant in anticipation of increased demand and broadened markets for plywood specialties during the coming years.

New machinery has been installed and production lines modified for the manufacture of overlaid, textured, scarfed, marine grade 2.4.1, and hardwood-faced plywood. The Coos Bay plant is but one of five facilities operated by the company within its Western Division. A production level of 5 million square feet a month (⅜ inch basis) is anticipated for the Coos Bay plant, or about one-fifth of the company's total U. S. production of plywood. Here 4x8 foot size panels are produced ranging in thicknesses from ¼ inch to 1⅛ inch. New equipment facilitates scarfing to any desired length.

The new series of products is being marketed under the trade name "Evanite,"—a name used to identify all products of the company's Western Division. In addition to the five Oregon plants, the company also has a plant at Vancouver, B.C., manufacturing plywood, hardboard, decorative paneling, battery separators, dunnage free loading components and other wood specialties. A subsidiary, Plywall Products Company, Corona, Calif., manufactures prefinished paneling under the name of Plywall.

A Progressive Company With Large Timber Resources

Evans Products Company is one of the nation's 500 largest corporations, with headquarters at Plymouth, Michigan. In the Pacific Northwest, the Western Division owns or controls cutting rights on more than three and a quarter billion board feet of timber. A source of raw materials is thus assured for many generations to come, under a progressive reforestation program. Like all other divisions of the company, the Western section maintains a well-staffed and well-equipped research and engineering facility, both for improving manufacturing techniques and for expanding the scope of usefulness for its products.

Hardwood-Faced Plywood Available In Various Wood Finishes

Evanite hardwood-faced plywood is initially being produced with face veneers of Birch, Red Oak, White Oak, Idaho Knotty Pine, Philippine Mahogany and Madrone. As demand requires, additional surfaces will be made available. This line of plywood is especially intended for use wherever fine finish work is required, as in cabinet work and wall paneling. Hot-pressed on a Fir core, the hardwood panels are made in thicknesses from ¼ to ¾ inch. Inner plies are all solid and jointed. A new Lustre-Sheen sanding process insures quality surfacing.

Demand for the new Evanite line of plywood has been so satisfactory, according to a company spokesman, that employment has almost doubled at the Coos Bay plant, since their introduction.

Other Specialty Products And Their Uses

Crezon overlaid Fir plywood is another of the new specialties being made in the company's Roseburg mill. The medium density plastic surface, available on one face or both, makes finishing far easier on such items as signs, gable ends, soffits, siding, cabinets and in various industrial applications. Crezon overlaid panels are made in thicknesses of 5/16, ⅜, ½, ⅝ and ¾ inch.

Panels ⅝ inch-thick, 4x8, with the now familiar Texture One-Eleven treatment are also being produced now at the Coos Bay plant. Grooves are spaced at four or eight inch centers and panels have shiplapped edges.

In accordance with DFPA specifications, the plant has expanded into the production of marine-grade Fir plywood scarfed to any desired length, or in standard long panels. Veneer consists of selected old-growth Douglas Fir and cores are solid and jointed.

Interior-type 1⅛ inch thick Fir plywood panels are now being manufactured to conform with the 2.4.1

Plywood is beveled on this Globe scarfing machine.

Scarfed plywood at the glue table, ready for joining.

Workmen shown loading three-opening Globe scarfing press.

New Yates-American wide belt sander turns out more work on two shifts than two former machines did on three shifts.

system of combined subfloor and underlayment developed through DFPA. Panels, which are supplied either square-edged or tongue and grooved, fit between post-supported beams on four-foot centers, with 2x4 inch blocking as a rule at perpendicular four-foot spacing. Tongue and grooved edges or the use of metal H-shaped clips may permit the elimination of blocking—a boon to construction men. Panels are hot-pressed with resin-fortified interior type glue, and touch-sanded for uniform thickness.

New Modern Equipment And Techniques Speed-up Production

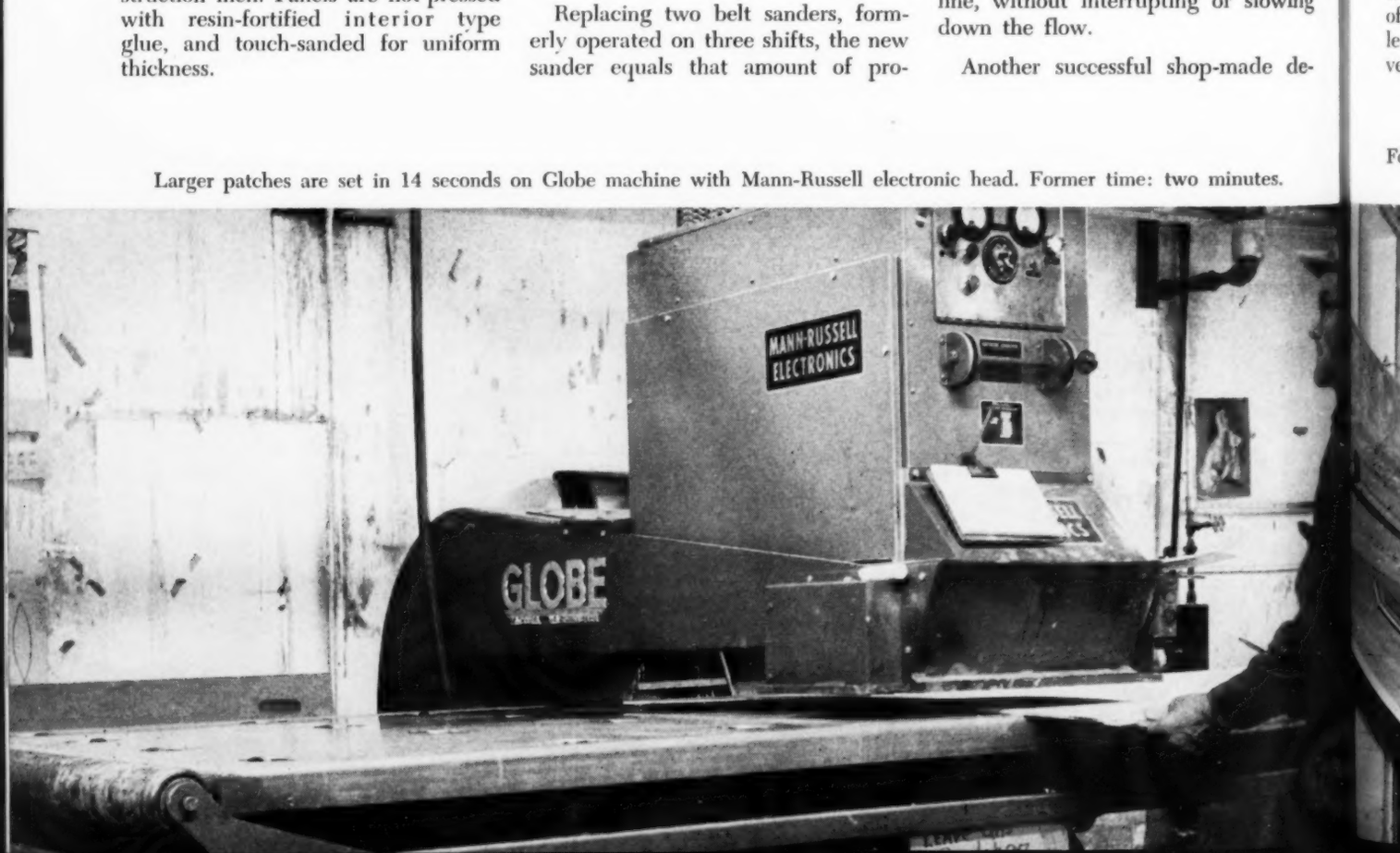
One of the major items of equipment that has been installed to meet stepped-up production requirements is a new sander, which belt-sands panels after patching. The sander is automatically fed by a special feeder. Sanding on hardwood faces is at the rate of 60 to 90 feet a minute.

Replacing two belt sanders, formerly operated on three shifts, the new sander equals that amount of production on two shifts in addition to all the hardwood plywood now being run through. One operator controls the machine.

Inspection after sanding is facilitated by means of an air-operated panel turner, shop-designed and shop-built. Four sets of arms operate on an axis to continually flip panels as they move along a roller conveyor line, without interrupting or slowing down the flow.

Another successful shop-made de-

Larger patches are set in 14 seconds on Globe machine with Mann-Russell electronic head. Former time: two minutes.



Tongue and grooved 1⅛-inch Fir plywood is marked in preparation for shipment.

vice is an air-operated turntable, which permits end-for-end horizontal rotation of panels to be patched.

Larger defects are now patched on a new patcher utilizing an electronic head. Patches are set in as little as 14 seconds, as compared to the two minutes previously required to set patches with an electric hot plate.

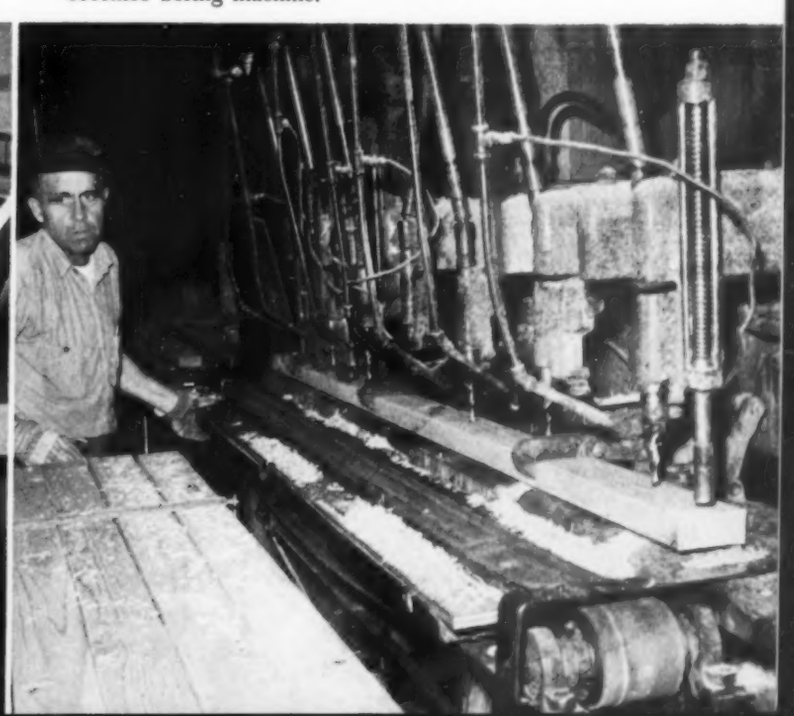
A new jointer makes possible a smoother job of cutting thick charges of veneer, and is more accurate and less likely to induce cracking of veneers during jointing. Additional savings are credited to a new machine which slices through a thick charge of veneer at the press of a button, cutting it into suitable core lengths.

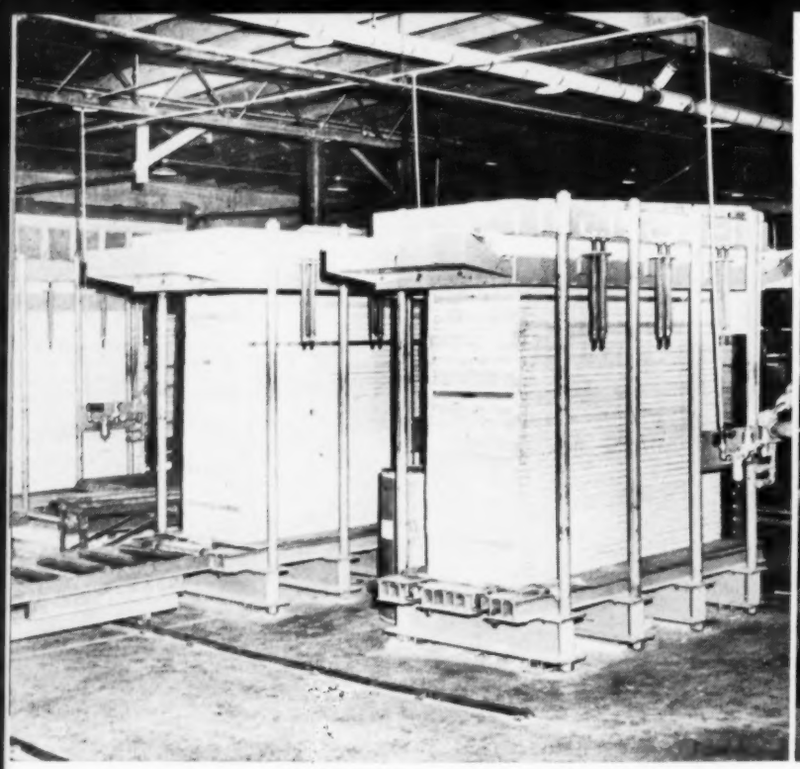
Considerable machining is also performed at the plant in connection with the manufacture of components for Evan's DF (dunnage free) loading system for railroad cars, utilizing modified or special machinery. These and other machinery units used in the production of "Evanite" plywood specialties are shown in the illustrations on these pages.

A pioneering spirit is evident in the Evans Products Company's efforts and plans in the plywood specialties field. Their modernization of equipment, expansion of production facilities and broad marketing concepts represent an American spirit that has made our country great, and will help the woodworking industry attain its rightful place of leadership in the years ahead.

Four-way panel turner is shop-made and air-operated.

Multiple drilling of DF members is performed on a modified Greenlee boring machine.





Flush doors under pressure in this typical installation of four Air-Hose laminating presses.

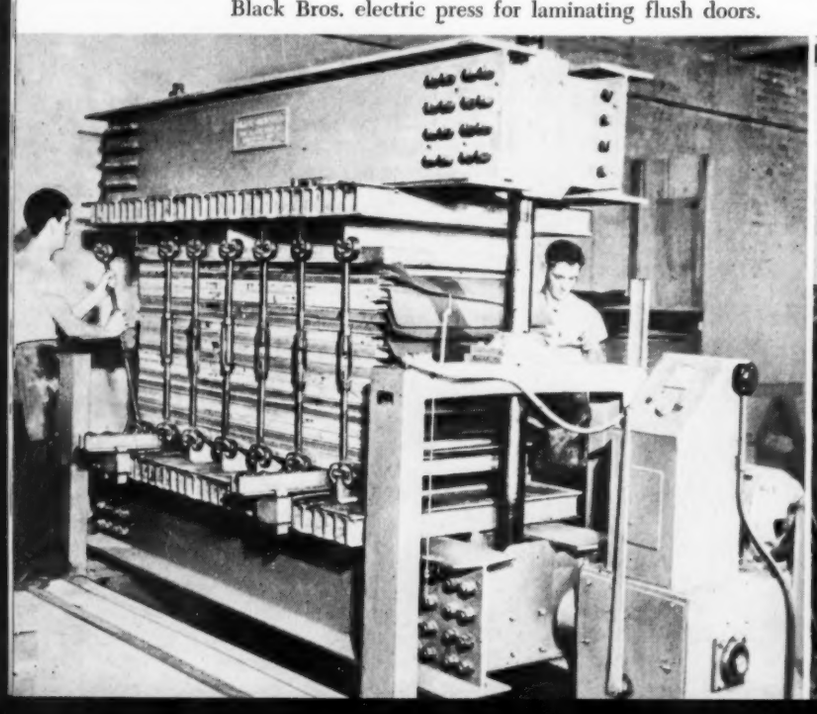
Core strips being coated in a Black Bros. spreader, with Air-Hose presses shown in background.

New developments in the Flush Door Industry

by R. J. BANDEKOW

The flush door industry has grown tremendously and many new methods of manufacture have been developed. In this, the first of two articles, the author presents a comprehensive discussion of economic factors and manufacturing trends, including classification by type of press equipment, core types and materials. A second article in this series will be devoted to the subject of adhesives used in flush door manufacture.

Black Bros. electric press for laminating flush doors.



Typical press utilizing Retainer Clamps and I-Beams.

Although flush doors have been manufactured and used for some time, economic factors in recent years such as severe competition, increased freight rates, increased manufacturing costs and a shortage of manpower have brought about distinct changes in this industry. These have to do with both the raw materials used and the type doors manufactured.

Initially, most of the flush doors produced were made by the older, established woodworking firms, and only those of the solid type. In most cases, these were made up entirely of wood. During the last ten years, however, we have seen these solid doors replaced to a large degree by the hollow or semi-hollow flush door having faces and cores of a variety of materials such as paper, wood, plywood, hardboard and intermediate materials. The industry has grown tremendously and many new methods of manufacture have been developed during the period of expansion.

Trend Toward New And Smaller Plants Located In Strategic Areas

The need for reducing the over-all cost of hollow flush doors has caused many manufacturers to start new plants in or near densely populated areas, near potential markets and in areas where, due to little industry, large amounts of manpower were available. Many new plants are now located in the eastern states.

These plants generally have an area of 15,000 to 50,000 square feet and manufacture from 600 to 4,000 doors per day per eight hour shift. The convenience and freight savings of imported plywood and hardboard at eastern ports has also had an influence upon location. There is a definite trend towards smaller plants more strategically located so that they can be readily closed and moved if local or operating conditions become unfavorable.

In many of the new plants, overhead personnel is kept to a minimum —generally limited to a manager, clerk and foreman. Very often, inexperienced help is employed and trained as production gets underway. Occasionally poor quality equipment is used and this, with unskilled labor, frequently results in poor quality doors.

New Plants Utilize Improved Materials, Equipment And Methods

More often than not, however, location changes have been accompanied by improvements in equipment, manufacturing methods and types of adhesives used. Several years ago, only a few plants in the eastern part of the United States were manufacturing flush doors. Some of these used casein, soybean-casein and animal glues, and a few urea or urea-polyvinyl resin adhesives. As new plants began to spring up ten years ago most of them used polyvinyl resins. In time, many turned to urea resins for better and more water resistant bonds. About five years ago, the improved, so-called no-clamp casein and casein blend adhesives with latex additives again made their appearance. Actually, all types of adhesives are now in use, each offering advantages and disadvantages, depending upon operating conditions and quality of bond desired.

Manufacture Of Quality Doors At Lower Cost Essential To Survival

Most flush doors are manufactured utilizing one of the cold-press methods. This holds true for both interior and exterior doors. Actually, little apparent consideration is given to the latter term with some manufacturers claiming all their doors can be used for both interior and exterior installations. Extreme competition, especially in the eastern United States, has caused some manufacturers to cut corners wherever possible with the result that many doors are manufactured and sold for improper application.

The new Commercial Standard CS 171-58 will in time undoubtedly have some effect upon this situation. Manufacturers of better doors realize that higher quality doors must be made at lower costs if they are to survive.

Flush Door Plant Classification By Type Of Press Equipment Used

Generally speaking, flush door plants can be classifed by the type of pressing equipment employed. These include:

1. Air-hose laminating presses.
2. Hydraulic presses with I-beams and retainer clamps.
3. Hot presses in conjunction with other mentioned systems.
4. I-beams and retainer clamps only.
5. Furniture clamps only.

Air-Hose Laminating Presses

These are a recent development and are increasing in number every day. Several types are offered by many manufacturers. They are entirely operated by air pressure introduced into several units of closely spaced, special, oversized hoses. The hoses are located above the upper, movable platen and apply pressure through expansion with introduction of air.

Air-hose presses are especially adaptable to the so-called No-clamp or Quick-clamp gluing system where pressure periods vary from 20 to 60 minutes, depending upon the temperature and type of adhesive and face sheet used. The polyvinyl resins, polyvinyl-vinsol resins and casein blend glues are used principally with this system. In most setups 35 to 50 doors are assembled either on a conveyor or in the press in 12-20 minutes. Pressure is then applied to the press load for the required period after which the stock is removed from the press and permitted to "rest," preferably for several hours. A heavy caul should always remain on the load after removal from the press to insure against lifting edges of the skin, etc.

Hydraulic Presses, I-Beams And Retainer Clamps

Where hydraulic presses, I-beams and retainer clamps are utilized polyvinyl, urea, phenol-resorcinol resins and casein glues are in most common use. No-clamp glues are also used in some operations.

With this manufacturing method, I-Beams are properly positioned across the lower platen with a sufficient number provided for proper distribution of pressure. A wooden caul is placed over the beams on which the assembled doors are stacked. Over the top door another caul is placed on which an equal number of I-beams are positioned. The press is then closed and the top and bottom rows of I-beams are joined with retainer clamps, which are tightened before the press is opened. The entire load is then removed and stored, thus making the press available for the next load. The process is completed in 15 to 30 minutes depending upon the ability of the assembly crew, type of door construction, etc.

Pressure periods vary from three hours to overnight. With urea and phenol-resorcinol resins the loads are often stored during curing in a heated area at 80° to 90°F. to shorten the pressure period, thus reducing necessary storage space and equipment requirements.

I-Beams And Retainer Clamps

This pressure system is very similar to that discussed above without the advantage of a hydraulic press. All types of adhesives have been used but generally employ those which require several hours for curing. Retainer clamps are hand tightened to produce pressure. Due to poorer pressure control, a gap-filling type of adhesive is recommended.

Furniture Clamps

A few plants, generally the smaller ones, employ furniture clamps in conjunction with I-beams for producing pressure on the load. An adhesive with gap-filling properties is an absolute requirement for such a system.

Hot Presses

Some of the larger manufacturers who use melamine-urea, phenol and phenol-resorcinol resins for exterior doors, and also urea resins for solid interior doors, have one to several hot presses which are used in conjunction with any of the above-mentioned cold-press systems. A hot press when properly and continuously used easily justifies its investment.

Core Materials

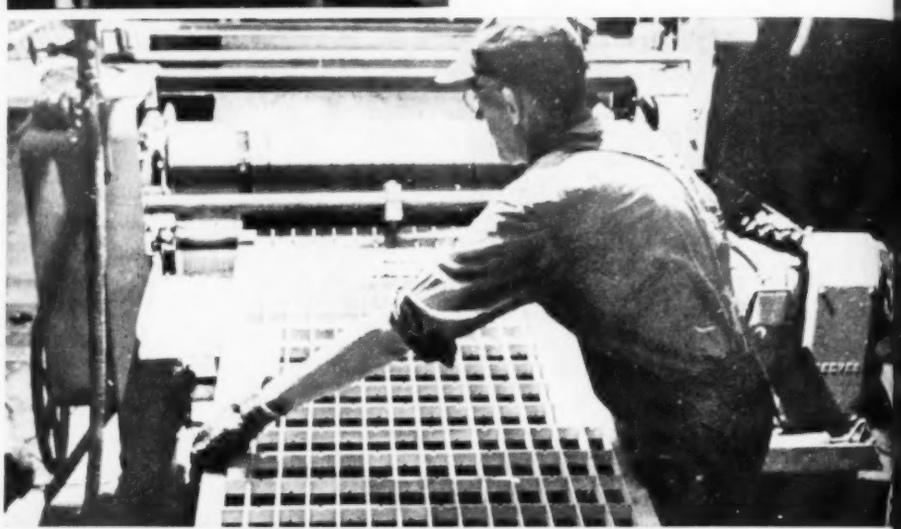
The center section of a typical hollow-core door is made up of a frame, consisting of stiles and rails, and other materials that provide support for the faces or face skins. A variety of materials are used in the space of the wooden frames. Their proper choice and arrangement can eliminate objectionable depressions or irregularities in the facings of the finished door.

Grid Or Lattice Core—One widely used type of center section is the grid or lattice core. This consists of wooden, hardboard or corrugated paper strips about 3/16 to ¼ inch in thickness so arranged that the openings are about 4 inches by 4 inches with the edges of the strips or lattice forming the support for the face skins. Many variations of this general construction are in use today.

Ladder Type Core—When strips are placed several inches apart, running from stile to stile of the frame, we have the ladder type core. This type is less costly than the grid core but not as efficient.

Paper Honeycomb Type Core—A few manufacturers use paper honeycomb cores. These are formed of paper which may or may not be impregnated with a phenolic resin. For interior doors the unimpregnated type is used. Doors made with honeycomb cores are sturdier than hollow or semi-hollow doors. The use of this type of core will undoubtedly grow as improved methods for handling are developed.

View of Berthelsen hot press used in flush door manufacture.



Grid or Lattice type core shown passing through glue spreader.

Worker positioning core strips in ladder type core.

Details Of Honeycomb Core Construction

Honeycomb cells for standard flush doors are 1 or 1⅜ inch in diameter and made of 80 pound paper. In assembling the honeycomb core the top and bottom rails of the frame are first glued to the unexpanded core with a quick-setting, tacky adhesive, generally a low-cost polyvinyl. After the adhesive has set, the two rails are carefully pulled apart, expanding the core, and then inserted in notches of the stiles or a jig and nailed with corrugated nails. The honeycomb is then stapled along the stiles to provide proper distribution of the core over all areas after the lock block and hinge blocks (if used) have been pushed into place by local compression. Care must be taken to avoid any serious gap in glue contact lines during this process, however.

The core strips should be sliced 1/16th to 1/20th inch thicker than the thickness of the frame of the core. This provides better and greater retention of adhesive on the surface of

View of typical Celotex ladder core.

Honeycomb type core as used in flush door construction.

Sectional garage door with hardboard faces and honeycomb core, utilizing contact adhesive, passing through a Black Bros. rotary type laminating press.

the core and also better contact between the honeycomb core and face skins. The assembled core is then passed through metal rollers which have been spaced apart the same thickness as the frame. This operation causes the honeycomb paper edges to be folded over. It also compresses wooden sections which might be slightly oversized, insuring intimate contact over the whole core area during curing. The operation is one of the most important steps of honeycomb core construction, for if the thickness of the honeycomb slice and the frame were exactly equal the only gluing contact area between the core and the skins would be in the thin ends of the paper cells, and this has proven unsatisfactory in practice.

When the above procedure is followed the adhesive will collect and form a bead along the cell wall ends resulting in better contact area and bond. Because of bead formation, it goes without saying that an adhesive with craze-resistant properties should be used.

The adhesive is usually spread upon the honeycomb core, although some manufacturers have found spreading of the face sheets to their advantage. When the latter method is practiced, it means the loss af about 20 percent adhesive, or that part wasted on the surfaces between the walls of the honeycomb cells which serves no function.

Facing Materials

Plywood is the most commonly used material for faces or skins. Much of the plywood now used is imported from Japan, Finland and other European countries. Our domestic birch, gum, walnut and mahogany are generally used for the higher quality doors that command a little better price.

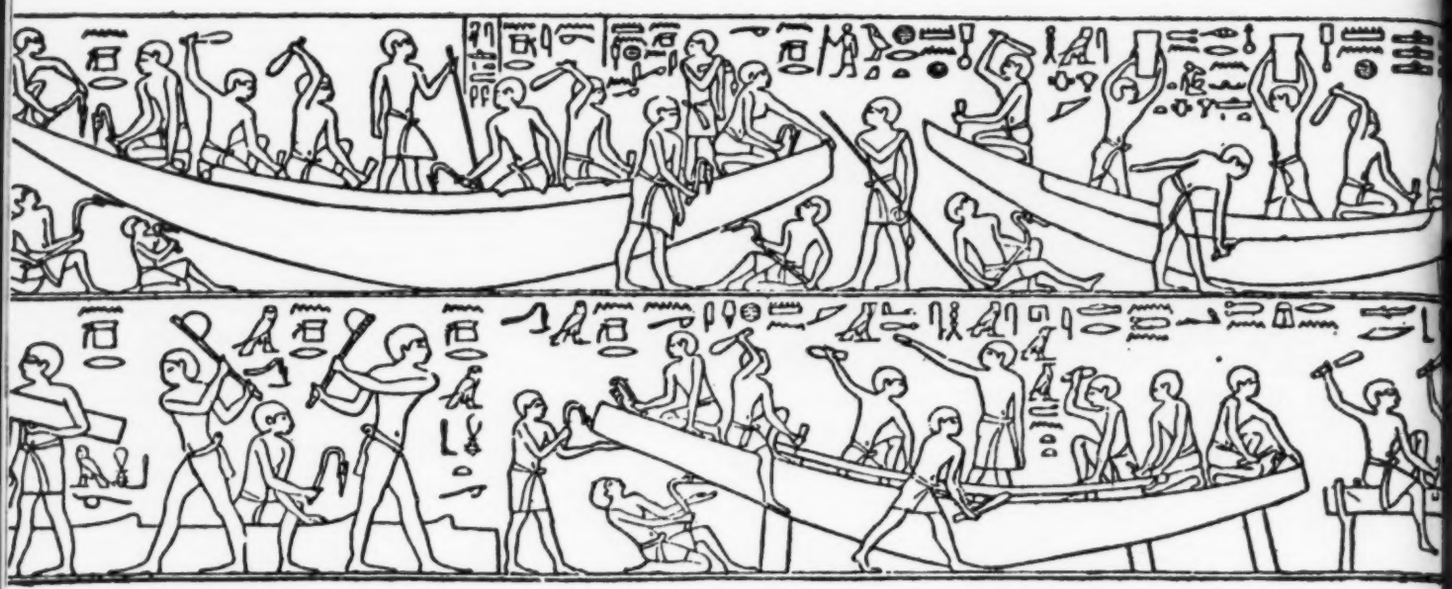
Many doors are also made with hardboard skins, and in exceptional cases with aluminum or high density laminates. These are applied directly over plywood or hardboard skins, of which most are of the imported type.

In common practice, plywood and hardboard skins are ⅛th inch in thickness. However, they may be thicker in special cases. Most plywood is three-ply in construction and generally the same species throughout. Hardboard used often varies in density, and when the higher densities are utilized the surfaces coming in contact with the adhesive should be sanded. Adhesives for these assemblies should have a wetting action to provide for proper penetration into the hardboard for a good bond.

The Adhesives & Chemicals Division of The Borden Chemical Company has announced the availability of a series of reports on hot and cold pressing problems, together with technical data describing the complete line of adhesives and resins it has specially formulated for the flush door industry. For free copies of the report, write Department H, The Borden Chemical Co., 350 Madison Avenue, New York 17, N.Y.

R. J. BANDEKOW

The author, associated in the Forest Products Industry for more than 19 years, holds a B.S. Degree in Forestry from the New York State College of Forestry at Syracuse University, and a masters degree from the Yale School of Forestry. He served as a field director of the North Eastern Wood Utilization Council prior to joining the Borden Chemical Company in 1946 as a technical service representative. In his present position of district manager for the company's Resins and Chemicals Division, Bandekow is in close contact with nearly every segment of the forest products industry.



THE ROMANCE OF WOOD

by HENRY P. GLASS

The enchantment of wood becomes an inspiring reality as the author recalls the important part wood has played in the history and destiny of mankind. Wood has served man since time immemorial and symbolizes our deepest emotions and highest aspirations. Through research and technology many new and versatile products made of wood are rapidly being introduced, which foretell a still greater appreciation and usage of this, our only renewable natural resource—so rich in heritage—for the further benefit of all mankind.

Human beings have been favored by the Creator with an endowment of emotions and expressions which go far beyond the necessities of life. Such expressions as art, poetry, music and spirituality, represent the highest and most beautiful capacities of our being and are activated by our sense of esthetics. They are sometimes collectively defined by the term "romance." Their very existence, to me, is simple proof in turn of the eternal presence, benevolence and omnipotence of the Divine!

What's more, there is hardly a facet of any romantic endeavor which, as inspiration, as foil or as actual media, has not in some form made use of nature's other great gift to man . . . WOOD.

Wood has played its part in legend and literature, in song and sonnet, in art and industry, in symbols and signs from the advent of our earliest ancestors on this planet until our time and probably in all the future to come. It was the fruit of the Apple tree that caused the banishment of Adam and Eve from the garden of Eden. Then again, it was the wooden ark which saved Noah and a pair of every species in God's creation from the great flood, and provided them shelter until the dove brought a branch of the Olive tree, to this day the symbol of life and peace.

There is hardly a cult or myth, fable or creed which is not intertwined with arboreal growth. Hinduism has its sacred trees. Budda's enlightenment occurred in the shade of a Bodhi tree, ancestor of the huge trunks of Bodh-Gaya forest in India, where faithful Buddists congregated to meditate on their pilgrimage.

The romance of nature, mainly a lotus blossom in a pond, has been utilized as a decorative motif in this graceful coffee table designed by Henry P. Glass for the Tonk Mfg. Co. Fluted lotus design appears on upper tips of table legs which seem to pierce the floating tops. Table has genuine Walnut top and structural parts of Wild Pecan.

Confucius, before his death in the fifth century B.C., uttered the famous words: "The strong timber is broken, the wise man fades as does the plant." Yet his philosophy has deeply influenced the most numerous nation on earth, and his family tree has grown in unbroken line through seventy-seven generations. There are people living today who are his documented and undisputed descendants.

The Koran, holy book of the Islam, is read by the faithful from a ritual stand, elaborately carved of rare oriental wood. Exodus, chapter 36, contains a precise verbal blueprint with meticulous indication of joints and mortises for the boards of precious Setim wood from which the Lord's first tabernacle was to be constructed. And in III Kings 5 it is told how King Hiram of Tyre, upon Solomon's request, furnished floats of Cedar logs from the Lebanon mountains for shipment to the site of the great new temple being built in Jerusalem.

Centuries later, it was a wooden cross on which God's Son was crucified. A carpenter by trade, He was sent to this earth to redeem mankind. The sign of that wooden cross has conquered empires and continents and has established a new spiritual power. From this power of Christianity sprang the rich and noble heritage which we call Western Culture today.

Wood has changed the course of history and human development. It was man's first building material, first source of heat and light. The dug-out canoe was the first means of transportation afloat and a round log under a load was the first wheel.

For centuries, wood was the main raw material for all implements of peace and war; the plow, the cart, the rake, the watertrough and waterwheel that turn the millstones, the handles of all tools, ax, scythe, hoe, saw, hammer were all made of wood, as was the spear, the bow and arrow, the gunstock, and the shield which, painted and decorated, became the crest and symbol of the feudal family. It was the intense heat of charcoal, a wood product, that facilitated the forming and forging of metals.

Homer, in his great epic, the "Iliad," tells of a wooden horse that decided the fate of Troy when the besieging Greeks used a ruse. Feinting a retreat, they left the wooden statue outside the gates. The Trojans then brought it into their city in triumph, not knowing that it contained a contingent of Greek infiltration commandos, who by night slipped out, set fire to the city and opened the gates for their returning comrades, thus bringing about the fall and ravage of Troy and the victory of the invading Greeks.

The "Iliad" is mythology, but wood plays just as important a role in the following historical fact. In 480 B.C. Greece was threatened by overwhelming Persian forces commanded by their king, Xerxes. Themistocles, the Athenian general, consulted the infallible Delphic Oracle. Pythia, the high priestess, sitting on her three-legged stool, brooding over some ram's entrails, gave him this cryptic message: "Build walls of wood." Themistocles, who would rather be an admiral, cleverly interpreted the message as advice to build ships, which he did, two hundred of them. The showdown came in a tremendous sea battle near the island of Salamis in the Aegean Sea during which the huge Persian armada was routed and thrown into wild retreat.

For thousands of years our miraculous land-grown wood was the only available material of which ships could be built for venturing upon the seven seas, to maintain interchange of goods and ideas between peoples, to discover and conquer unknown islands and continents. Later came the Roman galleons with their multitude of wooden oars, the long boats of the Norsemen, and the proud sail-

ing ships of merchant mariners and buccaneers of many nations with their majestic masts made from tall pines and firs, and with elaborately carved mermaids breaking the waves on their bows.

In 1492 three gallant wooden vessels made sensational news. Their names: the Pinta, the Nina and the Santa Maria. Their captain: Christopher Columbus. And in 1620 it was the Mayflower under Miles Standish which brought the first white settlers to the shores of New England. Out of the timber they felled to clear their fields and pastures, they built their homes, churches and schools, the cradles for their infants, the coffins for their dead, their looms, spinning wheels and cobblers' benches, their tables and chairs, their beds and chests. Through the primeval forests of their continent, they advanced inland using nature's abundant material for their protection against hostile Indians for forts and fences. The woodsmen, the lumberjacks, became the forerunners of civilization, and their great deeds were told in tall tales around the campfires of our pioneers. In this way undoubtedly originated the famous legend of Paul Bunyon and his blue ox.

These loggers and woodsmen made up a hardy breed that has become almost proverbial for its reputation of undaunted toughness. They were glorified in many songs but never more zesty and colorful than in the old American ditty about the logger who "stirred his coffee with his thumb." Not only could he stand any heat or cold, ("at 100 degrees below zero he buttoned up his vest"), but this classic gem of backwoods folk humor claims that "he never shaved his whiskers off from his horny hide; he'd pound them in with a hammer and bite them off inside." Wow!

From the host of wood-inspired folk tunes of all tongues, I would like to cite just two more. First, the famous "Schnitzelbank" (whittler's bench) with its endless funny rhymes and repetitions, "kurz und lang, kreuz und quer, schiess gewehr," etc. Although Bavarian in origin, this song is better known in this country now. It has almost become the municipal anthem of Milwaukee, the capital of Schlitzerland.

There is another scarcely known sentimental old German ballad about a sawmill. It's always been one of my favorites and I have freely translated the lyrics into English, as illustrated.

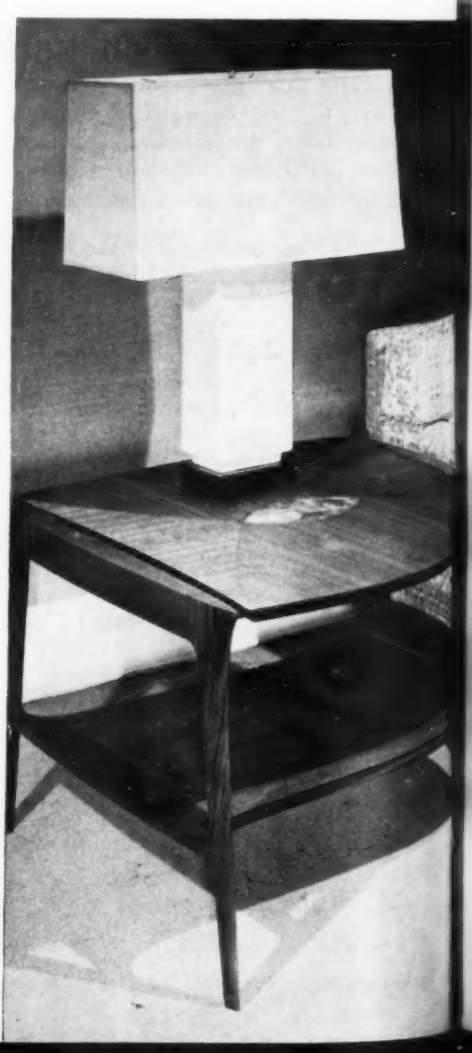
Wood, our most romantic technological miracle, is not only the inspirational but often the very physical source of sweet music. There is no more sensuous and sublime resonance chamber than one built of wood. All string instruments and woodwinds take advantage of this fact. But even percussion uses our favorite material for castanets, marimbas and xylophones (from Greek "xylos" which means "wood"). And, of course, we again find wood in the leading role of the conductor's baton.

The psychological influence of wood as a mood setter is remarkable, both in its natural appearance as a living tree as well as in its endless end products from picnic basket to wall paneling. The seasons of the year are heralded in by the changing appearance of trees. The fragrant blossoms of spring, the lush, shady foliage of summer, the fruit harvest and the blazing colors of autumn, the icy glittering lacework of Birch and Aspen, the Christmas spirit of Fir and Fine decorated with the white magic of snow. Truly our trees in all their splendid metamorphoses are the adornment of our landscapes! And, incidentally, they are the vital and essential regeneration of life-giving oxygen in the air we breathe.

Unlike most other materials nature has given to man for his use, trees are not consumed; they are in a sense brought to real life when felled and utilized to form man's utensils, shelters, surroundings and artifacts.

Wood products are wonderful companions in many pursuits of fun and recreation: the hockey stick, the tennis racket, the snowshoe, the surfboard, and, of course, the magic laminated Hickory slat which has opened up the exploration and enjoyment of winter wonderland, the ski!

The practically limitless variety of properties of various species in hardness, tensile strength, toolability, elasticity, color and grain makes wood a matter of greatest creative potential. Like the twelve keys of music offering the composer innumerable possibilities of sequence and combination, or the primary colors on a painter's palette



The creative possibilities of wood are fully demonstrated with this occasional table designed by Henry P. Glass for the S. J. Campbell Co. Using Walnut, the designer has created a romantic sculptured object with inlay top that accentuates the wonderful wood grain. Center piece in top is available either in enamel or copper or Walnut.

which can be mixed and blended to achieve any tint or shade of the spectrum, just so are the infinite diversities of wood a keen challenge to the designer's imagination.

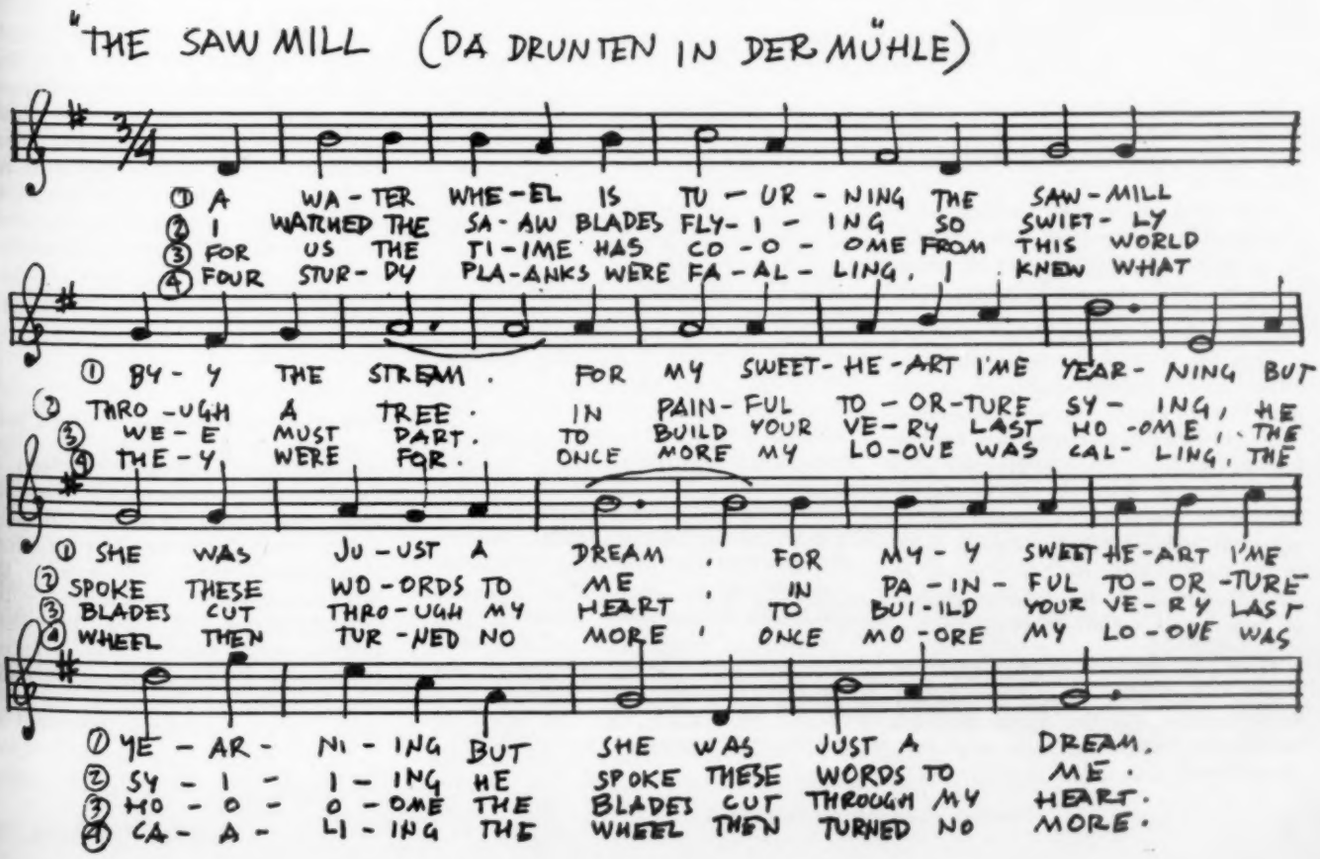
The feather weight of Balsam, the high density of Lignum-Vitae, the homogenity of Basswood, the resiliency of Lemonwood, the abundance and yield of rotary cut Douglas Fir, the ductility of Beech after steaming . . . are all obvious technological advantages, but when it comes to romance, it is the beautiful color, pattern and texture which invite the sensuous artist and artisan to experimentation and achievement.

The sculptor experiences the vision of the three dimensional figure hidden in the log. By revealing it chip by chip, the structure of the grain helps him to bring out the subtleties of shape, light and shadow. But even in the flat surface, wood is the inimitable imprint of benevolent creation: the pale chasteness of Sycamore, the amberglow of Birch and Maple, the perpetual interest of Oak, Elm, Ash, Chestnut, the friendly informality of Knotty Pine, the casual rustic look of Cypress, the warmth of Cherry, Pear and other fruitwoods, the exciting patterns of all the members of the Walnut family, the luminous bands and ripples of Mahogany, the lustrous irridescence of Myrtle, the intricate lacework of Tuya, the wild fire of Rosewood and Paldao, the facinating rhythm of Zebrawood, the enchanting rich and sumptous color of natural Teak, the grave elegance of Macassar Ebony . . . they all give the designer and craftsman a boundless range of sublime value and chroma from which he has drawn in the past to achieve fantastic effects in intarsia, marquetry and parquetry, equal in awe-inspiring beauty and charm to the finest mosaics and stained glass windows, or other art forms of pictorial representation combining fragments of varigated color and texture to a harmonious entity.

These last mentioned disciplines have lately experienced a remarkable revival and have found many devotees among contemporary artists. Our own wonderful medium surely deserves to be rediscovered for such decorative imagery for anything from table tops, floor patterns to wall murals. Combined with new techniques of impregnation which would make wood surfaces chemically and physically impervious, there should be an ever enduring field of applications in unforseeable fields of human wants and needs.

In the coming age of interstellar communication, man will require emotional counterweights to keep his mind sane and to satisfy his God-given urge for the absorption and appreciation of beauty. The random charm of woodgrain will hold the balance with the sleek homogenity and dullness of the synthetic and will in some way establish a link between homo-sapiens of future milleniums and his mother planet, earth, on which grow trees and forests, and somewhere in a very secret place there blooms that legendary exquisite blue flower of romance for which all humanity is eternally yearning.

An old sentimental German ballad about a sawmill.


"THE SAW MILL (DA DRUNTEN IN DER MÜHLE)
① A WA-TER WHE-EL IS TU-UR-NING THE SAW-MILL
② I WATCHED THE SA-AW BLADES FLY-I-ING SO SWIFT-LY
③ FOR US THE TI-IME HAS CO-O-OME FROM THIS WORLD
④ FOUR STUR-DY PLA-ANKS WERE FA-AL-LING. I KNEW WHAT
① BY-Y THE STREAM. FOR MY SWEET-HE-ART I'ME YEAR-NING BUT
② THRO-UGH A TREE. IN PAIN-FUL TO-OR-TURE SY-ING, HE
③ WE-E MUST PART. TO BUILD YOUR VE-RY LAST HO-OME, THE
④ THE-Y WERE FOR. ONCE MORE MY LO-OVE WAS CAL-LING, THE
① SHE WAS JU-UST A DREAM, FOR MY-Y SWEET HE-ART I'ME
② SPOKE THESE WO-ORDS TO ME, IN PA-IN-FUL TO-OR-TURE
③ BLADES CUT THRO-UGH MY HEART, TO BUI-ILD YOUR VE-RY LAST
④ WHEEL THEN TUR-NED NO MORE, ONCE MO-ORE MY LO-OVE WAS
① YE-AR-NI-ING BUT SHE WAS JUST A DREAM.
② SY-I-ING HE SPOKE THESE WORDS TO ME.
③ HO-O-OME THE BLADES CUT THROUGH MY HEART.
④ CA-A-LI-ING THE WHEEL THEN TURNED NO MORE.

ASSOCIATION & RESEARCH NEWS

Wood Collection Dedicated At Syracuse Forestry College

Professor Harold A. Core, left, and Dr. Carl H. deZeeuw, both members of the faculty of the Department of Wood Products Engineering at the State University College of Forestry, Syracuse, examine a rare specimen of wood recently added to The Harry Philip Brown Memorial Wood Collection. Several hundred wood samples are added to the collection each year. The collection, of close to 20,000 different wood specimens, is housed in the Department of Wood Products Engineering, in the new Hugh P. Baker Memorial Wood Products Laboratory.

One of the most important wood collections in the world was recently dedicated to commemorate the golden anniversary of the State University College of Forestry at Syracuse University. The dedication was another in a series of special events being held in 1961 to mark their 50th anniversary.

This 46 year old wood collection, owned by the college, has been named the Harry Philip Brown Memorial Wood Collection in honor of a former faculty member. The late Harry Philip Brown was its founder and served as curator of the wood collection for 35 years. It was started by Brown back in the early 1920's for the purpose of obtaining material for specific studies on wood and wood structure.

Over 90 per cent of the Syracuse Forestry College's wood collection is authenticated. For this reason, it ranks high among the few extensive validated wood collections in existence in the world today. According to Dr. Eric A. Anderson, chairman of that department, the collection is used "for teaching, demonstration, research, identification, and as a reference library."

In the collection there are close to 20,000 wood specimens from countries located on all six continents of the world. Contained in the American Sections are samples of trees from all over the U. S. Included are native and naturalized woods.

In charge of the collection today is Harold A. Core, instructor in wood technology, who serves as curator. Commenting on the collection, he states: "A wood collection, of this type, combined with research tools, such as the powerful electron microscope, can reveal to the scientist many secrets of wood not yet known to man. And, the more mankind knows about wood, the better will man be able to use it."

U. S. Forest Products Laboratory Reports

A durable natural finish that retains much of the beauty of wood house siding is described in one of 15 new or revised reports recently issued by the U. S. Forest Products Laboratory.

Properties, formulations, and methods of applying the finish, which protects siding exposed to weathering, are described in Report 2096, "Forest Products Laboratory Natural Finish." Since its introduction by the Forest Products Laboratory several years ago, the finish has been widely produced by paint manufacturers. The revised report brings up-to-date the experience records on it.

Among the other reports available are the following: No. 2224, "Wood—A Source of Raw Material for Chemical Utilization," No. 1666-21, "Board Materials from Wood Residues," No. 1666-18, "Wood Fuel Combustion Practice," No. 1881 "Predicting the Strength of Reinforced Laminates with Temperature Gradients," No. 1766-16, "Veneer Cutting and Drying Properties," (Note: Pertaining to Tamarack logs) No. R1665-2 "Special Methods of Seasoning Wood," and No. 2221, "Effect of Defect Placement and Taper Setout on Lumber Grade Yields When Sawing Hardwood Logs."

Utilization Study of Low Demand Native Hardwoods

Without knowing it, picnickers in Shawnee National Forest and the Crab Orchard National Wildlife Refuge are helping to test the usefulness of native Red Oak and Hickory timber in picnic tables.

Production of an experimental lot of 72 tables is under way in the Wood Products Pilot Plant at Southern Illinois University's Southern Acres campus near Carterville. The pilot plant is operated jointly for teaching and research by SIU and the Carbondale Forest Research Center.

James Micklewright, Central States Forest Experiment Station wood technologist at Carbondale, Illinois is in charge of this utilization study. The tests will indicate the serviceability of Red Oak and Hickory over a period of years.

The purpose, he explains, is to find out how practical this low demand yet plentiful lumber is for picnic tables and how to best treat it for durability. Production methods for manufacturing tables in small or medium-sized woodworking shops will also be studied. Information gathered will be compared with that of tables manufactured from the usual softwoods.

5th Annual Wooden Pallet Clinic

The State University College of Forestry at Syracuse, N.Y., in cooperation with the National Wooden Pallet Manufacturers Association, Washington, D.C., will sponsor the 5th Annual Clinic on wooden pallet manufacturing and sales. The clinic will be held Nov. 1 and 2 at the College of Forestry's Hugh P. Baker Forest Products Laboratory.

Commenting on the forthcoming course, William H. Sardo, Jr., execu-

tive vice president of the NWPMA said, "The Clinic affords those connected with the wooden pallet industry a once-a-year opportunity to exchange the best ideas on manufacturing and merchandising pallets. The 1961 sessions are particularly timely in that this industry is on the verge of a major expansion of its markets."

Professor Russell C. Deckert, Industry Service representative for the College of Forestry, and Conference Coordinator stated, "Today the wooden pallet is an important and integral part of materials handling. The great changes occurring both within and outside the industry, make it difficult for management to keep abreast of these changes. It is our hope that the clinic will aid industry in producing pallets of maximum efficiency."

Total enrollment will be limited to 75 persons and only those actively engaged in manufacturing and distribution of wooden pallets, plus suppliers of materials and equipment are eligible to attend.

To register or to obtain further information, contact Russell C. Deckert, State University College of Forestry at Syracuse University, Syracuse 10, New York.

Hold Wood Composition Board Meeting October 19 & 20

Particle board, hardboard and insulating board producers and users will exchange ideas at a two day symposium on Wood Composition Boards. The meeting, staged by the Midwest Section of the Forest Products Research Society, will be held at Chicago's McCormick Place, October 19 & 20, according to Willard C. Gullicksen, section chairman.

Reporting a well-rounded panel of speakers, James C. Elf, meeting chairman, has a talented group representing both users and producers. An extremely informative program will be covered in three sessions—a producer panel is scheduled for Thursday morning, October 19, with a user panel that afternoon and an open question-and-answer clinic Friday morning, October 20.

Producer panelists are: Andrew Watts, Masonite Corp.; Robert LaCosse, Insulation Board Inst.; Walter Grubman, National Starch & Chem. Corp.; and Richard Campbell, Southern Plaswood Corp.

User panelists are: Andrew Place, Place & Co.; Jack Halberg, Hamilton Mfg. Co.; Paul Ecker, Curtis Companies; Arthur Pais, Laminite Plastic Corp.; Vincent Washburn, Hammond Organ Co.; Wayne Swett, Marlette Coach Co.; and R. E. Palmer, Henry County Plywood Corp.

The meeting will be opened by Wayne Lewis, U. S. Forest Products Laboratory with the theme of composition board trends and developments. Harry C. Smith, Braun & Aldridge, Inc., Orland Park, Ill., will speak on marketing at the luncheon on the first day. An added attraction will be a discussion on board and panel product finishing by C. O. Hutchinson, Glidden Co. On the afternoon of October 19, the F.P.R.S. Midwest Section will hold its annual business meeting.

NIWKC Convention and Winter Meeting Dates

The sixth annual convention of the National Institute of Wood Kitchen Cabinets will be held October 8 to 11, 1961, at Shawnee Inn, Shawnee-on-Delaware, Pa. The annual winter meeting is scheduled for December 7, the closing day of the NAHB exposition, at the Sheraton-Chicago in Chicago.

"The State of the Industry," a keynote address by G. C. Klippel, NIWKC's business analyst, will open the convention on Monday, October 9. First results of the Institute's cooperative advertising program and a year-end review of consumer and trade promotion also will be featured.

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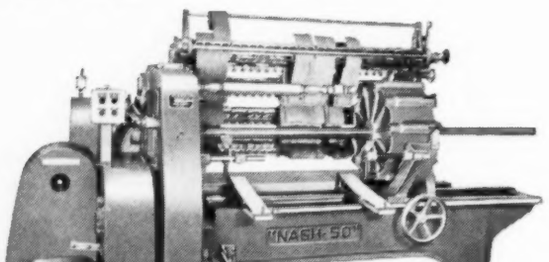

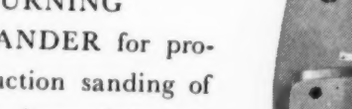

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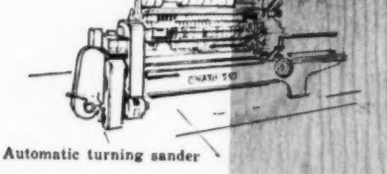
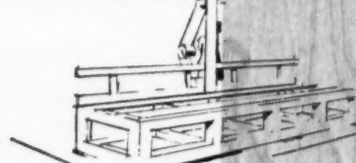


Case goods sander

Side edge sander



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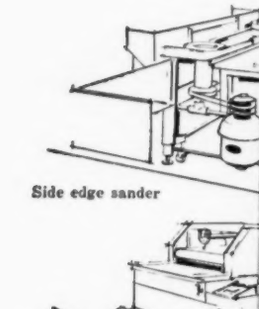

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A progress report on the engineering committee's testing program for factory-finished wood kitchen cabinets will highlight the second general session on October 10. Committee and staff reports and election of officers also are scheduled for this session.

NHLA Training School Graduates 44 Men

Students from widely scattered points combined to make up the 27th Class of our National Hardwood Lumber Inspection School which graduated July 14. A luncheon in the Claridge Hotel, Memphis, together with the ceremonies, combined to provide a fitting climax to the five months' intensive study and practice which the 44 men completed. Instructor Otis H. Goolsby gave a certificate to each of the men in acknowledgement of his achievement.

Following the invocation by Sam Carey of the Sam Carey Lumber Co., Memphis, the toastmaster, Charles Boydstun of the Mississippi Valley Hardwood Co., Memphis, greeted the 120 guests and graduates present and introduced a number of lumbermen who had taken time to attend the affair. Responding to Boydstun's request, Secretary-Manager M. B. Pendleton conveyed the best wishes of President Mark Townsend and the officers and directors of the Association to the graduating class. The address of the day was presented by Powers Smith of the Raymond Smith Lumber Co., Henning, Tenn. Responses were made by John G. Thomson, president of the class, and Gordon Beranek, vice president.

Campaigns For Modern Merchandising

John Hallinan, Portland, Oregon, lumber manufacturer and marketer (wholesaler) who has been waging a vigorous campaign for "Modern Merchandising" of wood products, was invited by the National Retail Lumber Dealers Assn. to air his view before a joint materials handling committee at a meeting held in Washington, D. C., August 21, under NRLDA sponsorship.

Hallinan received considerable attention when he converted his North Plains, Oregon mill to 100% unitization, began marketing lumber in "Strappack" and "Bagpack" units, and began shipping NRLDA approved units of lumber in stakeless "floating" flatcar loads.

Another recent Hallinan enterprise is "Shakepack," unitized shipments of Red Cedar shakes, a project worked out in cooperation with Jim Jackson, Jackson Shake Co., Moclips, Washington.

"We must study industry problems and seek advanced ways of making lumber more profitable to the yard, and on the consumer level, we must make every effort to show that lumber is more advantageous than the so-called 'competitive substitutes!' "

1960 Wood Office Furniture Sales Up Over 1959

Sale of office furniture in 1960 soared 5.4% over 1959 sales, according to the "Current Industrial Report, Manufacturers' Shipments of Office Furniture 1960," released by the Bureau of Census.

An analysis of the Census report, by the Wood Office Furniture Institute, the manufacturers' trade group, shows wood office furniture sales climbed to $91.5 million from 1959's record-breaking $87.4 million, an increase of 4.7%. Metal office furniture sales (excluding safes and files) for this same period were $203.1 million compared to the previous year's $192.2 million.

to make doors, furniture, patterns, display fixtures, or mobile homes?

"If you do, take advantage of my specialized background in supplying Douglas Fir, White Fir, Sugar Pine, Incense Cedar, Redwood, Ponderosa Pine, and Edge Glued Stock. I represent the best lumber mills in the West and I have clients from every part of the Country. Why do they buy from me? Because I supply the industrial lumber they want, when they want it, in consistent quality and grade, at a fair and reasonable price."

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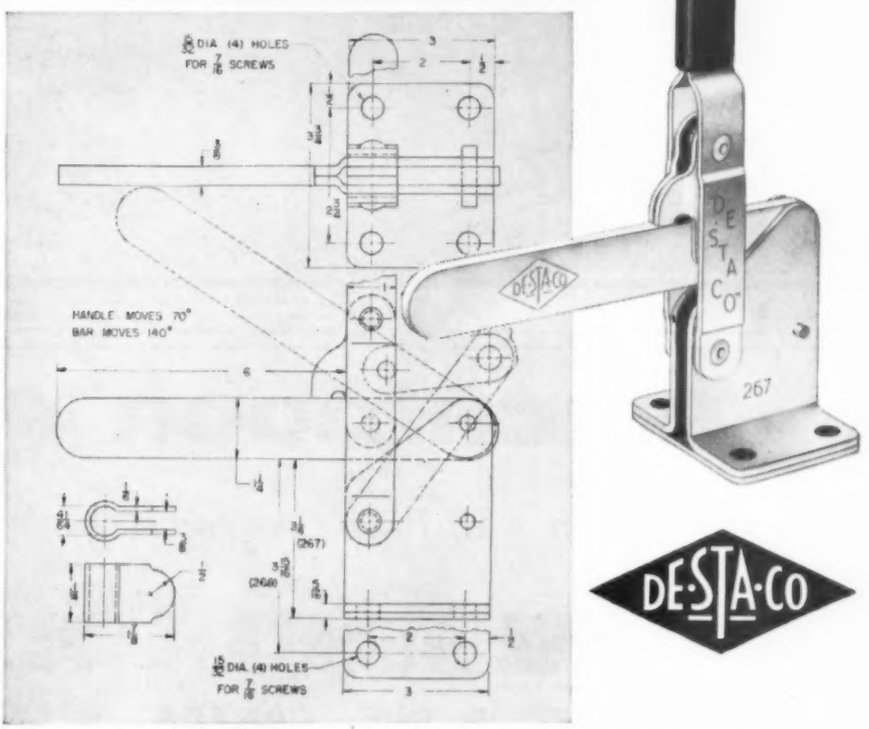

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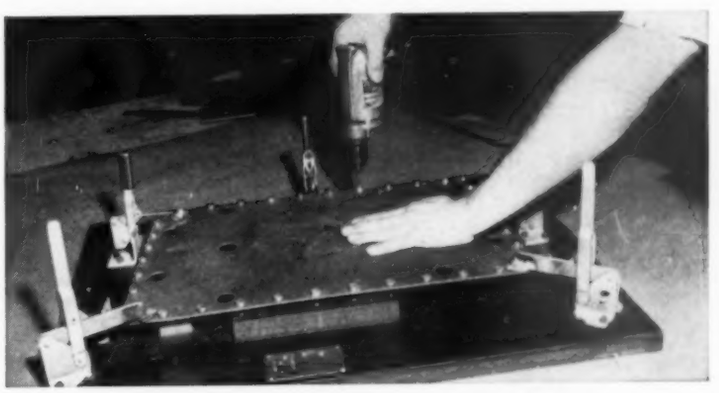

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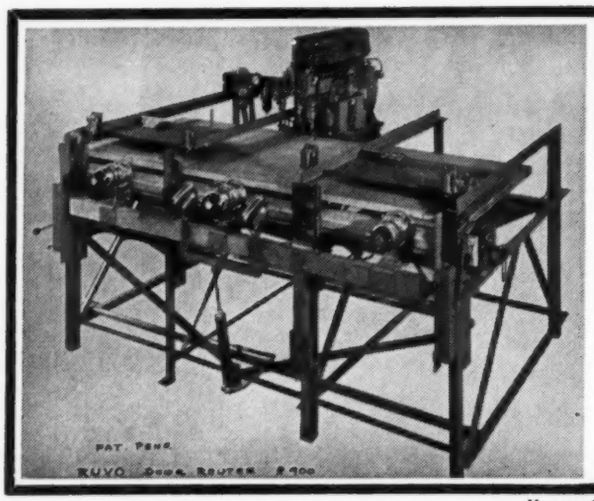

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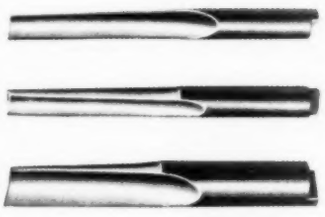

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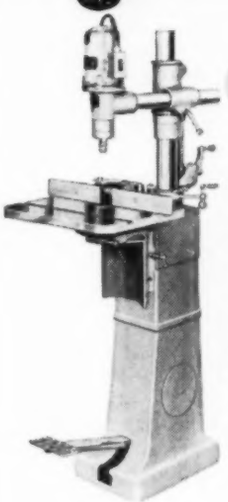
3 WOODWORKING EXPERTS!

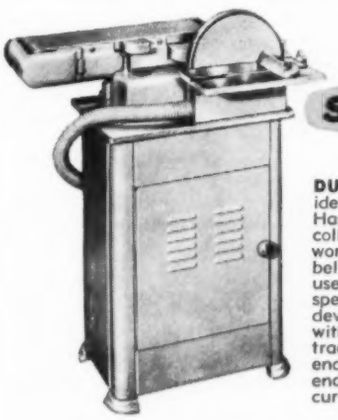


SAVE TIME!

DURO ROUTER-SHAPER-CARVER—the first low cost, stationary tool of its kind offering 3 way versatility with super speed convertibility. Motor unit can be switched from routing to shaping to carving and back again in less than 30 seconds without interrupting the flow of work. Has crank type head raising and lowering mechanism, new design box type base, large foot pedal with over-ride. Spindle speed 20,000 r.p.m. Chuck capacity for routing ¼" to ½", spindle adapters for 5/16 and ½" bore shaping cutters, 4 precision ball bearings.

SAVE MONEY!

DURO 15" BAND SAW—built the way you want it—to do your kind of work! Has one piece box type cast iron frame and guard (with built in lite) which covers both wheels and blades; slotted table tilts to 45°, (holds mitre gauge); balanced wheels are mounted on anti-friction needle bearings; ball bearing blade guides reduce friction and wear, plus a host of others. Duro Band Saw line includes 10, 12, 15 and 16" woodworking models plus metalworking units.



SAVE LABOR!

DURO BELT AND DISC SANDER—ideal for wood, metal or plastic. Has extra capacity dual dust collector and flameproof bag, large work table interchangeable with belt or disc, belt surface can be used vertically or horizontally, special pre-loading belt tensioning device permits installation of belts without re-tensioning and re-tracking; "swing-away" forward end guard opens for easy access to end of drum for sanding curved objects.

Send for FREE Catalog

See the above units fully illustrated and explained in detail, with specifications, dimensions and prices. Also shows the complete Duro line of woodworking power tools. It's yours for the asking.

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PERFORMANCE NOTES

Water Spray Keeps Abrasive Belts Flat

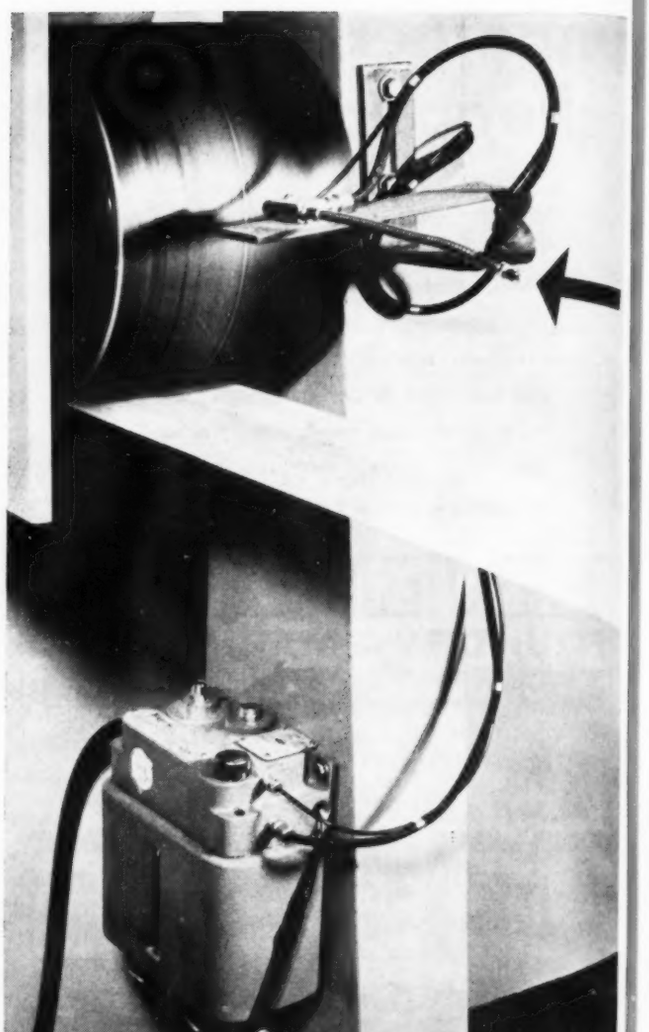
Cupping of coated abrasive belts in excessively dry atmospheres can now be eliminated reliably and at small cost by spraying the back of the running belt with water. Careful hygroscopic testing proves that no moisture reaches the workpiece. This treatment allows year-around use of resin-bonded belts whose productivity in the woodworking industry has been limited due to curling in dry climates.

Humidification of belts with steam, announced recently by Behr-Manning Co. of Troy, N.Y., continues to be sound practice where belts operate within housings, as with a vertical sander. But moisture deposited as steam does not suffice when large areas of the belt are exposed, as with stroke sanders and other horizontal machines which take belts of lengths to 380 inches and more.

As developed by Behr-Manning product engineers, the system uses a "Spraymist" coolant unit manufactured by the Bijur Lubricating Corp., requiring only connection to compressed air and electric lines. This equipment generates the spray internally and maintains a consistent output, which is not possible with the ordinary water line as the source. Once adjusted for the delivery rate which will keep the belt flat, the flow is held constant by a pressure regulator.

Operation of the humidifier is controlled by a solenoid valve which can be connected through a manual switch or tied in with the control circuit of the sander. Water is pumped in a very fine spray and in small quantities through a slotted orifice mounted on flexible tubing. The 5-gallon container is more than adequate for a full working day. Thorough testing proves that the workpiece is not wetted; no raising of wood grain is experienced.

On wide belts, it has been found necessary to spray only a few inches of width along each edge. Even under the most severe conditions of low humidity, only a few seconds suffice to restore the belt to total flatness, with a moisture content equivalent to the ideal 55 per cent relative humidity.

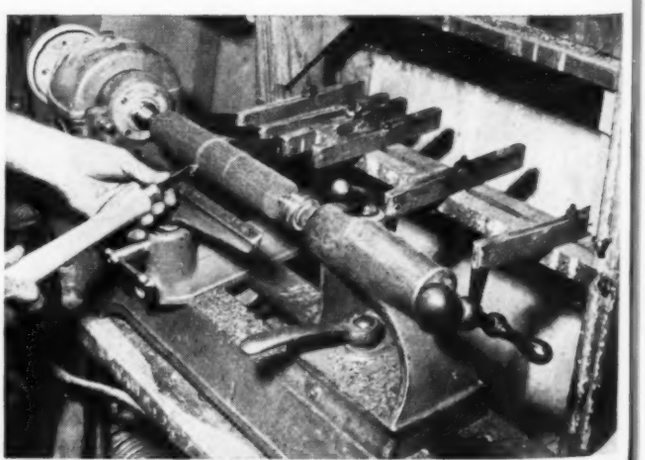


Typical installation of a spray unit to keep coated abrasive belts flat in dry atmospheres. Arrow indicates the spray nozzle.

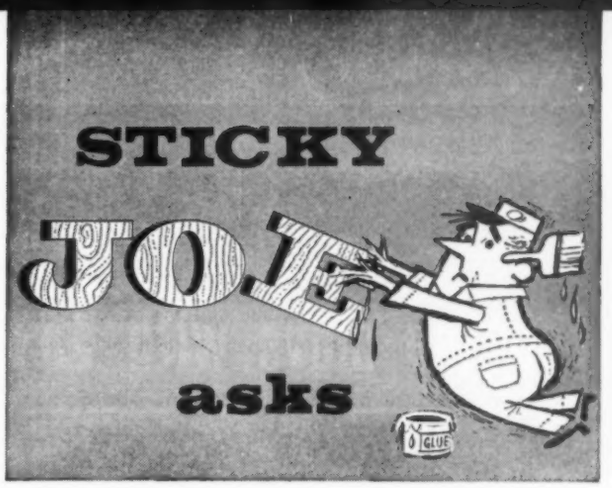
Automatic Calipering Device Speeds Work On Wood Lathes

An ingenious calipering device enables Marshall Studios, Veedersburg, Indiana, manufacturer of contemporary lamps and occasional tables, to speed up turning of round lamp parts and table legs on this Rockwell-Delta 16-speed wood lathe.

The device assures uniformity in long turnings made by hand. It consists of a series of sheet metal fingers, mounted on a bracket behind the lathe, which may be set for the maximum diameters along the length of the turning. The fingers rest on the stock until the wood is turned to the set diameters. At that point, the fingers fall, indicating that the proper diameter has been reached. No further calipering is necessary. Tapers between maximum and minimum diameters are made in the usual manner.



Automatic calipering device shown mounted on bracket behind lathe.



Editor's Note—In establishing this service we will give you the answers of qualified technical people to many questions concerning the use of adhesives. If you have any problems regarding adhesives just send them to "Sticky Joe," c/o Hitchcock's WOOD WORKING Digest, and he will ask the experts for the answers.

QUESTION: I recently heard a discussion of the theory of wood joint adhesion between two experts. One contended that adhesion is dependent upon penetration and hold of the adhesive into and upon the wood pores. The other insisted that adhesion has little to do with penetration but rather depends upon molecular attraction of the adhesive and wood surfaces bonded with it. Which assumption is correct?

ANSWER: The reason that glue adheres to wood and coheres to itself would have to be explained by the fact that there is molecular attraction. The polarity of the wood and glue are such that they do attract one another. It is very necessary that the glue will wet the wood properly in order to set this attraction in motion. Some of the glue does enter into the pores of the wood. Most of the glue remains at the surface. In both cases, the chemical affinity of the wood and glue to each other bring about the necessary forces to hold the two pieces of wood together.

from: M. A. Rayo

QUESTION: A new Modern Danish styled line just adopted by our company is constructed of Teak, a wood that is relatively strange to us. In gluing this wood we are troubled with an oily film in the surface which acts to hold out the glue and prevent adequate penetration. We have tried various materials for washing off this film but it continues to exude and give trouble. How can we best solve this problem?

ANSWER: The oil content in Teak wood varies considerably from log to log which presents a difficult gluing problem. If washing the surface of the Teak with a solvent such as Carbontetrachloride does not prove entirely satisfactory, it is suggested that the stock be surfaced just prior to gluing. A resorcinol-phenol type resin is generally preferred for gluing Teak, but urea-formaldehyde resins have been used with a fair degree of success.

from: A. B. Klinetob

QUESTION: Breaking apart solid Maple panels which showed weak joints we found blisters on the glue joint areas. It does not seem that these could result from moisture content of the wood as it was in a range of 5 to 6 per cent. Can you tell us possible causes of these blisters for correction of our gluing procedure?

ANSWER: Blisters in solid Maple or plywood panels made of stock having 5 to 6% moisture content may be due to any or several of the following: non-uniform moisture content, too short an assembly time, too thin an adhesive mix, non-uniform or too heavy a glue spread, too short a press cycle, too high a press temperature or presence of defects in the stock.

from: R. J. Bandekow

IDENTIFYING THE EXPERTS

M. A. Rayo
Chemist
The Franklin Glue Company
119 West Chestnut Street
Columbus 15, Ohio

A. B. Klinetob
Vice President
General Sales Manager
Perkins Glue Company
Lansdale, Pennsylvania

R. J. Bandekow
Assistant Sales Manager
Resins & Chemicals Department
Borden Chemical Company
350 Madison Avenue
New York 17, New York

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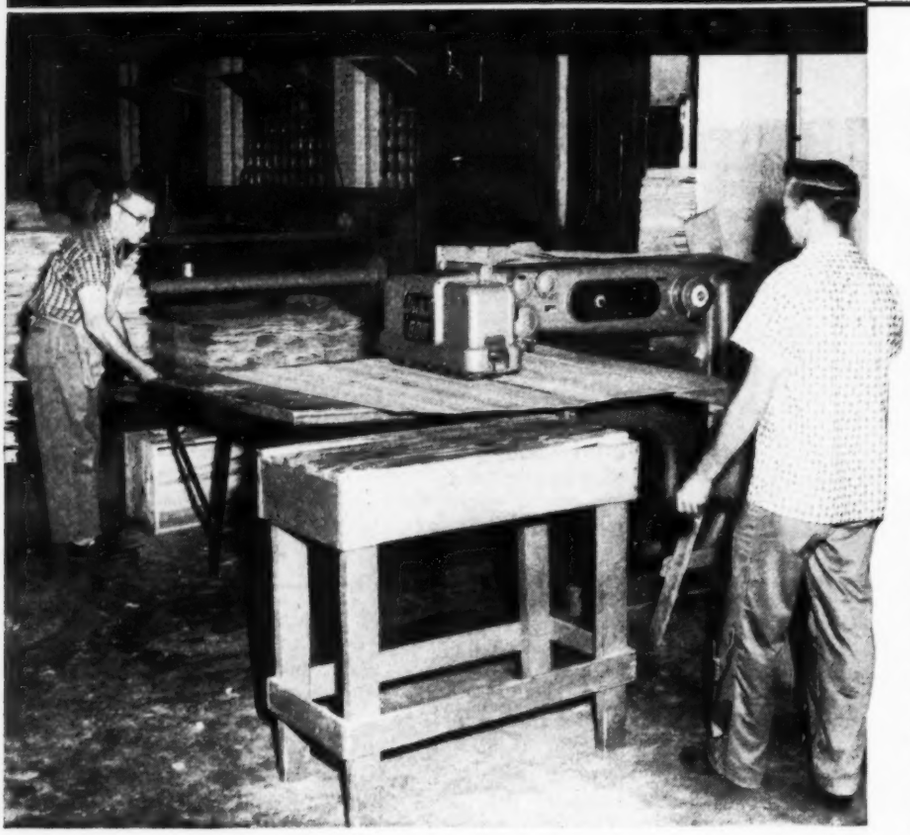
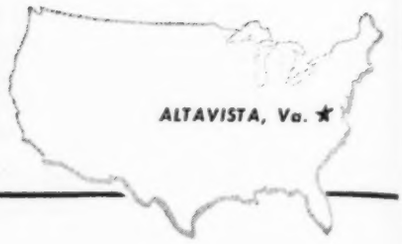




The Lane Company, Inc.

Three generations of newlyweds have set up housekeeping with a Lane cedar chest as one of their prized possessions. Today Lane is not only the nation's largest manufacturer of cedar chests, but also a distinguished name in case goods and tables, postwar additions to the company's line.

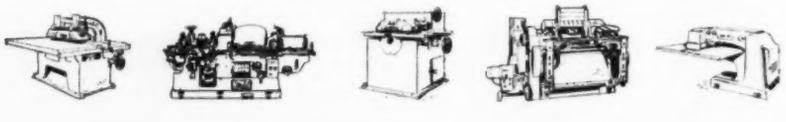
From a box plant bought for $500 at a bankruptcy sale in 1912, Mr. E. H. Lane has seen his Altavista, Va. plant grow into one of the largest in the world, turning out hundreds of finished chests and tables every day. The company has added two other plants—at Rocky Mount, Va. and Smyrna, Tenn.—to keep pace with the constantly growing demand for furniture bearing the quality Lane brand.

Diehl 800 splices 1/8" poplar veneer at 160 fpm

Helping to maintain highest standards of workmanship at Lane's Altavista, Va. plant are eight Diehl Tapeless Veneer Splicers, including a Diehl 800 model purchased in 1959. This machine splices 1/8" poplar veneer used primarily in the production of occasional tables. The entire glued surface is heated instantly by *direct* application of heat to glue, providing exceptionally high-speed production. The Diehl 800 at Lane has been averaging 160 feet per minute.

If you want extra-fast splicing on heavy crossbanding, corestock and backs 1/16" and up, you'll find the Diehl 800 Tapeless Veneer Splicer well worth investigating. Remember—Diehl has built and sold more tapeless splicers than all other makes combined!

The traditional craftsmanship associated with Lane cedar chests is also evident in Lane's newer furniture lines, such as this strikingly modern cocktail table.



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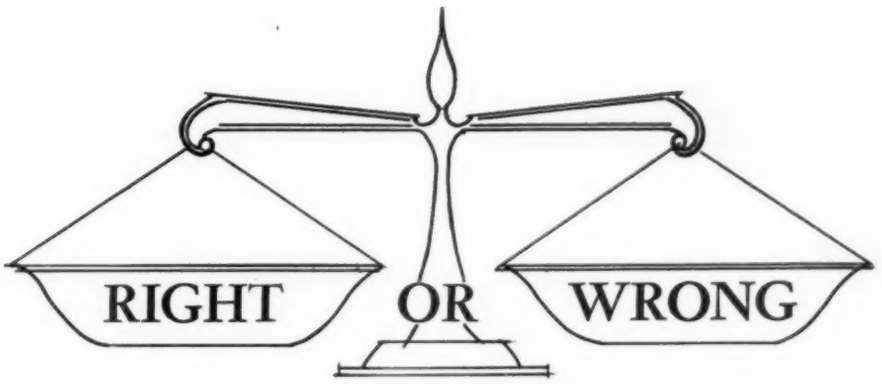


A round-up of day to day in-plant problems and how they were handled by management men. Each incident is taken from a true-life grievance which went to arbitration. Names of some principals involved have been changed for obvious reasons. Readers who want the source of any of these cases may write to Hitchcock's WOOD WORKING Digest.

When Can't You Fire An Employee For Punching Another Worker's Time Card?

What Happened:

A cardinal sin in industry is for one worker to punch another's time card. Every company has a rule on this.

One afternoon Fonte and Wizner, two employees, were meeting in the manager's office. The discussion was about some work problem. When the talk was over, both men started to leave. Fonte reached for his time card and punched it out. Wizner stopped for a moment to talk to the assistant manager. But before he did that he yelled to his buddy: "Punch me out, too, while you're there." Fonte obliged. The next day he was fired.

The case went to arbitration. The company said:

1. We have a rule. It is a reasonable one. We must enforce it. Otherwise employees will take advantages.
2. Fonte knew of this rule. In fact, we have posted it conspicuously on bulletin boards.
3. If we make an exception here, we will never hear the end of it. Everyone else caught will want special consideration.

Fonte's reply was:

1. I was just doing a fellow a favor—I meant no harm.
2. How come I was fired? What about Wizner? If it's wrong to punch out another's time card, isn't it just as wrong to ask someone to violate the rule?

Was Fonte: RIGHT ☐ WRONG ☐

What Arbitrator Thomas P. Whelan ruled:

"This arbitration understands and entirely agrees with the company's argument that it has the right to provide for positive rules and regulations for the conduct of its employees and the orderly operation of its plant. Among these rules is that governing the punching of time cards. This rule is reasonable and has been properly established. The obvious purpose is to prevent cheating on the part of tardy employees and those who leave work prior to the quitting time. The rule provides that punching of a card other than an employee's own is reason for dismissal.

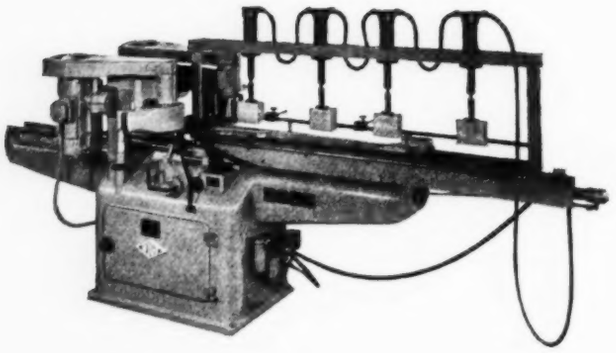
"The testimony is undisputed. It pictures a situation where two employees have completed their service for the working day, are proceeding to leave the employer's premises and are about to punch out. One requests the other (who happens to be nearer the clock) to punch him out also. There was no question of quitting before the established quitting time. There was no intent on the part of either employee to cheat or perpetrate a fraud. The grievant was not discharged for good cause. He shall be reinstated without loss of seniority and shall be reimbursed for any loss of wages."

Can Employees Protest A Reduction In The Workforce On The Grounds That They Are Being "Overworked"?

What Happened:

Management had a policy which read: "The company will continue its efforts and interests in behalf of the safety and health of its employees within the plant during their hours of employment."

As a result of extensive changes in equipment, the company rearranged the workforce in the department and cut the size of the crew from 9 to 5 men. The union took up the issue. It admitted that the company had a right to install technological improvements. It also had the right to reduce the number of employees



WIGO hydraulic AUTOMATIC DOUBLE TEMPLATE SHAPER

Permits even the smallest shop to produce shaped parts with dissimilar faces in one automatic operation.

NOW
WITH HEIGHT ADJUSTMENTS FOR EACH SPINDLE

Over 200 in successful use countrywide! The WIGO 1075 is ideally adapted to the profiling and shaping of straight or irregular edges on one or opposite sides of workpieces such as chair legs, chair backs, upholstery frame parts, etc.

FOR EVERY SIZE SHOP! Low initial cost of the WIGO 1075, in conjunction with its simple operation, enables even smaller shops to produce quickly and economically furniture parts which do not have parallel faces. The operation is completed automatically, in just one step, even by the most unskilled hands. The only mechanical operations required are insertion and removal of workpiece.

HYDRAULIC FEED! The WIGO 1075 features hydraulic feed, with speed infinitely variable by means of a hand lever which functions smoothly and effortlessly. A compressed air system clamps the workpiece and leads the cutting tools to and from the workpiece. Because the templates are identical in shape to the workpieces, they may be made from hardwood, and thus may be constructed in your own shop.

CONVENIENCE! In the WIGO 1075, tools and templates may be exchanged without removing parts from machine. Machine is also provided with easily accessible sockets for chip exhaustion attachments. Sizes 40"—100" and larger.

For additional information write directly to:

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122 BRETTEN ROAD
YONKERS, NEW YORK

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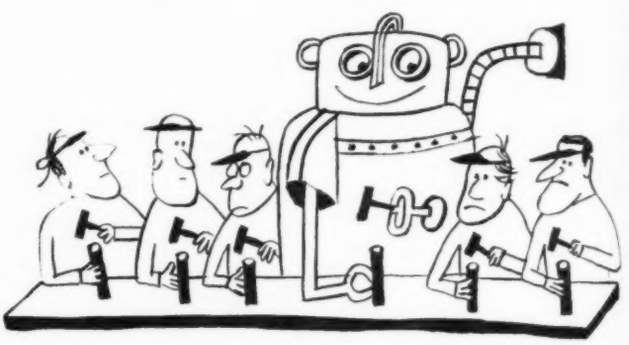
on a job due to better machines and methods. But if the remaining men have to work harder to the point of "overwork," then the company was endangering the health of the employees.

The company answered thus:

1. The new workloads are not unreasonable. The purpose of automation is to make work more efficient. We've done this.
2. The new methods and machines can now do the work of at least 4 men. So the remaining workers do work harder—but not so hard as to endanger their safety or health.
3. We must improve to meet competition—and cost reduction is a function of management.



Was The Company: RIGHT ☐ WRONG ☐

What Arbitrator Rolf Valtin ruled:

"Despite the substantial reduction in the operating force, the appraisal of the evidence is that an unreasonable workload has not been imposed on the employees. Indeed, evidence indicates that the employees do now work harder than they formerly did. The only real question is whether the present force can do the necessary work without exceeding reasonable workload limits.

"By the evidence presented, the arbitrator cannot hold that an unreasonable workload has been imposed. In the final analysis, it is primarily the NATURE of the work which has been changed. The grievance is denied."

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The Genuine "Jorgensen" HANDSCREW
Jaws adjust to desired angle, distribute even, firm pressure over broader areas of either angular or flat work. A long-time favorite of craftsmen, and still the finest clamping device for nearly all types of work.

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"With IMA, these two men do the work of ten."

writes A. E. Starke of Hanover Kitchens, Ltd.
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". . . they are working shorter hours . . . they have cleaned up the terrific back log of material that required edge banding when the IMA went into operation," Mr. Starke says.

"The IMA edge bander has been running nine hours a day since we put it into operation which is almost five months, and the only item that we have replaced to date is one of the heating bands."

IMA is the only straight-line, completely automatic production machine that applies veneer and plastic edge strips to particle board, plywood or lumber cores.

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AT CHRIS-CRAFT SAW SHARPENING SAVINGS PAY FOR FOLEY MODEL 200 AUTOMATIC SAW FILER 8 TIMES IN ONE YEAR!

Chris-Craft Corporation's plant in Pompano Beach, Florida, has over 100 carpenters who put the Foley Model 200 to good use keeping saws "working sharp". "Saws require sharpening once a week, or roughly 1800 separate sharpenings per year", reports Benjamin F. Weisel, chief tool repairman. Chris-Craft saves approximately 40 minutes per saw—up to 1200 hours yearly with the Foley Model 200. Additional savings are realized in Foley's maintenance-free performance and in properly sharpened saws for the workmen.

The Foley Model 200 Saw Filer automatically sharpens hand saws, band saws, rip and cross-cut circular saws and the difficult-to-sharpen combination circular saw blades. In minutes the Foley Model 200 files all teeth to a uniform depth and angle, while the operator is free to handle other jobs. The Model 200's quality construction delivers years of precision sharpening service.

Chris-Craft Corporation is just one of many manufacturers who have saved time, saved money and stepped up sawing production the Foley way. See for yourself what the Model 200 can do in your own shop. Send the coupon for literature on Foley industrial applications and complete details on the Foley thirty day free trial offer.

FOLEY MFG. CO. 3351 N. E. 5th Street Minneapolis 18, Minnesota

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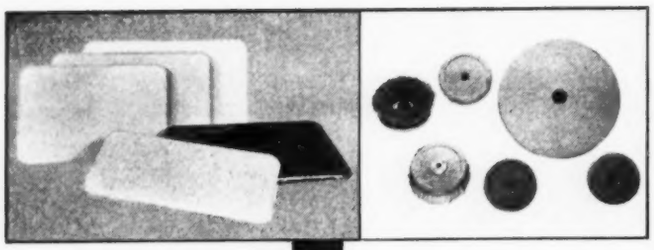

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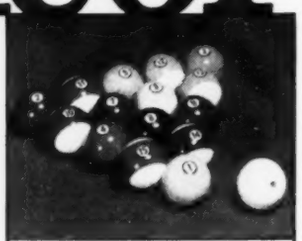

MOLCOR — a combination of fibers and phenolic resins — offers you exceptional time and money saving advantages over conventional wood and board products. MOLCOR is **custom formulated and molded** to meet your specifications. MOLCOR takes over where wood and board products leave off and gives you a wider latitude in your present and future product designs.

- **MOLCOR can be molded into many shapes or forms.**
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- **MOLCOR has excellent screw holding power, high resistance to water, moisture, splitting, warping and shrinking.**
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Take advantage of the economies, production short-cuts and quality-building characteristics of MOLCOR. Mail the coupon below for more information. Our field engineers are readily available for consultation.

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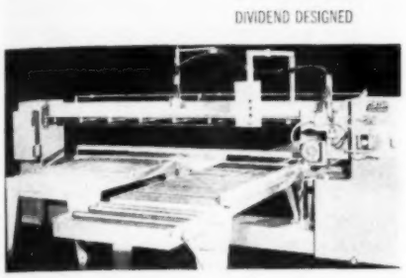
AVAILABLE LITERATURE

Literature described here and on following pages is available to our readers. Write directly, or use the handy reference cards—to obtain a copy of any piece of literature.

Panel Saw Literature Features Specifying Guide



A 6-page illustrated brochure (Bulletin 49-A) on their complete line of panel saws is now available from the C. O. Porter Machinery Company.

Together with complete specifications on available sizes, feed speeds, capacities and other operational data, this new literature features a unique, "engineer-it-yourself" specifying guide for saw infeed and outfeed tables. According to the manufacturer, this information enables any customer to easily and accurately estimate his own saw and table dimensions and types.

Available from: C. O. Porter Machinery Co., 522 Plymouth Road, N.E., Grand Rapids 5, Michigan.

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Band Saw Blade Production

A colorful new 6-page catalog has been published by Frank W. Swett & Son, manufacturer of Nickel Steel wood-cutting band saw blades.

An interesting feature of the new catalog is a sequence of illustrations which show the seven separate steps required to convert steel coil into finished Nickel Steel band saw blades. In addition, separate catalog sections explain the advantages of Swedish steel as blade metal, and skip-tooth design for wood-cutting bands.

Instructions for proper saw tooth selection plus a simplified ordering system are also special features of this new catalog.

Available from: Frank W. Swett & Son, 11 S. LaSalle St., Chicago 3, Illinois.

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Wall Chart Aids In Sandpaper Selection

A fact-filled wall chart of woodworking information has been prepared for the furniture and woodworking industries by Behr-Manning Co., Troy, N.Y., a division of Norton Company. The 13½ x 22-in. 3-ply cardboard chart is perforated for ease of hanging in sanding or finishing rooms, plant offices or other key locations.

In parallel columns, grit sizes are expressed in mesh numbers and traditional symbols in large bold numerals legible from a distance of several yards. Text and pictures describe types of grains, backings, and bonds used in modern coated abrasives, and suggest typical uses for each type and combination.

Available from: Sales Promotion Dept., Behr-Manning Co., 6101 Regan Street, Troy, New York.

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WOOD, ALUMINUM, BRASS, BRONZE, PLASTICS, EVEN STAINLESS STEEL...

THIS HAND BLOCK BELT SANDER SANDS AND FINISHES THEM ALL!!!

More than 1000 industrial firms are now using this versatile belt sander, find it exceptionally efficient and economical to operate. You'll find this machine the best investment you've ever made in sanding and finishing equipment. You'll like its low cost, too!!

Sturdily built, this BELT SANDER features a 42" x 80" table mounted on anti-friction rollers; is powered by a standard 2 HP, 2 or 3 phase ball bearing motor. Single phase and special motors can be furnished.

Write today for details on the BEACH BELT SANDER and information on the complete line of BEACH WOODWORKING MACHINERY.

...If you're in a hurry, call us...NOW!

BEACH MANUFACTURING COMPANY
MONTROSE, PENNSYLVANIA

Use postpaid card. Circle No. 249

Foreground: DUO-FAST Brad Nailer countersinks brad in curved molding. Hole is then filled and finished. *Background:* S-763 Staple Nailer fastens glue blocks to frame. S-763 also attaches strips to basic frame.

2 DUO-FAST models team up to cut frame assembly costs

A leading North Carolina furniture manufacturer replaced old-fashioned fastening methods with the two DUO-FAST models shown above. Result: production speed increased 100% with a proportionate cost reduction.

DUO-FAST offers a complete line of cost-cutting stapling equipment for furniture and woodworking plants and a wide selection of DUO-FAST staples and brads to do your job best. Whatever your fastening needs, DUO-FAST can fill them.

▶ **Write today** for the complete story. Also ask for a free demonstration in your plant.

FASTENER CORPORATION, 3706-08 River Road, Franklin Park, Illinois

1375

DUO-FAST Staplers Tackers Staples

Everything you need for tacking, stapling and nailing.

Use postpaid card. Circle No. 250

AVAILABLE LITERATURE continued

Woodworking Adhesives Reference Material

"Adhesives for Woodworking" a booklet recently brought out by H. B. Fuller Company, St. Paul, Minnesota, contains useful reference for the woodworking industry. Contents of the handy, file-size pamphlet discusses virtually everything from the basic wood to the finished products of the industry. Many of the basic subjects which are illustrated include: wood—definitions and types; adhesives; laminating and assembly; adhesive testing and Fuller products.

Fuller has developed types of glue for all phases of the wood-working industry and these are described in their relation to various operations in the field. Ask for "Woodworking" booklet.

Available from: H. B. Fuller Company, 1150 Eustis Street, St. Paul, Minnesota.

Use postpaid card. Circle No. 4

Cam Locks Detailed

Corbin Cabinet Lock Division of the American Hardware Corp. has published a new 12-page, fully illustrated catalog on its complete line of Corbin Cam Locks. The catalog features locking devices adaptable to wood or plastic in panel, drawer and cabinet installations.

Each type of Cam Lock is clearly illustrated, and includes a detailed dimensional drawing and complete design application information. Keying information is also included, as well as explicit details on material and finishes.

Available from: The American Hardware Corp., 102 Washington, New Britain, Connecticut.

Use postpaid card. Circle No. 5

Slip Proof Fabric

Slip proof fabric by Carborundum, a new pressure sensitive safety tread product, is described in a fact folder with sample attached. It comes in handy cleats or strips for stairways, ladders and fire escapes. It is also available in rolls up to 24" wide x 96" long for tailoring to practically any safety tread problems such as loading ramps and machine areas.

Available from: Advertising Branch, The Carborundum Company, P. O. Box 337, Niagara Falls, New York.

Use postpaid card. Circle No. 6

Revised Catalog Describes Power Tools

A completely revised 96-page catalog, describing the world's most complete line of industrial power tools and accessories, has been issued by Rockwell Manufacturing Company's Delta Power Tool Division.

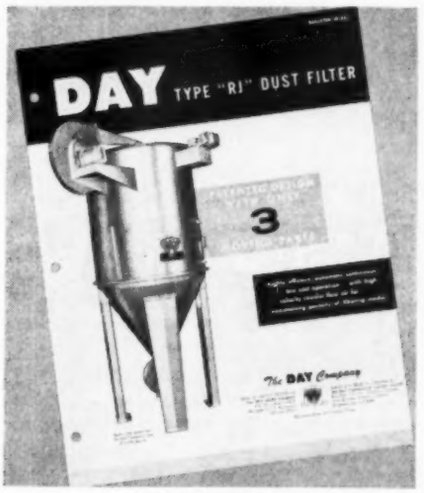
Described are Delta's complete line of drill presses, grinders, shapers, planers, jointers, metal and wood cutting lathes, tilting arbor saws, unisaws, band saws and radial saws. Complete specifications, catalog listings and descriptions of accessories for all tools are included in the catalog. Action photos and drawings supplement the text. Ask for catalog AB-61.

Available from: Rockwell Manufacturing Co., Delta Power Tool Div., 491 N. Lexington Ave., Pittsburgh 8, Pa.

Use postpaid card. Circle No. 7

High Velocity, Counter Flow Dust Filter

An 8-page bulletin describing the Day Type "RJ" dust filter has just been issued by the Day Company, Minneapolis, Minnesota.



The bulletin details, with diagram, the design and construction of the "RJ" dust filter. Installations are pictured and described and complete data is given for the dimensions and specifications of single and multiple units. Ask for Bulletin G-331.

Available from: The Day Company, 810 3rd Avenue N. E., Minneapolis 13, Minnesota.

Use postpaid card. Circle No. 8

NEWEST instruments for quality control – GIVE INSTANT, ACCURATE LUMBER MOISTURE CONTENT!

Models R-6 and V-6 operated by one hand!

Calibrated for 60 hard and soft woods in the 0-25% range, the new Model R-6 is an all-purpose lumber instrument. For all forms of lumber, plywood, and stacks of veneer, the R-6 has a penetration field up to 2", using a radio frequency power-loss circuit.

Model V-6, with a slightly modified electrode, gives the same instant, accurate answers on single thicknesses of all kinds of wood veneers in the 0-15% range.

Both instruments weigh less than 3 pounds. Both are one-hand-operated, leaving the other free for recording and moving test material. Both have self-checking standards—and trimmers to permit balancing on the spot. Battery-operated. Ruggedly built. Circuit board instrumentation.

Complete with carrying case,

$175.00 ea. f.o.b. Alhambra, California.

ELECTRONIC MOISTURE REGISTER INSTRUMENTS

For complete information, write to: WW

Moisture Register Company • 1510 Chestnut St. • Alhambra, California

Use postpaid card. Circle No. 251

REWARD

$25 FOR A CASE HISTORY OF HARD-BOARD IN ACTION

Explain, in terms of your plant operation, "how hardboard does it better" than other materials . . . giving advantages of actual hardboard use in the manufacture of a specific product. If your case history is accepted for advertising purposes you win $25. If it involves Georgia-Pacific hardboard, you earn . . .

All entries must be in by October 15, 1961.

$50

GP

GEORGIA-PACIFIC

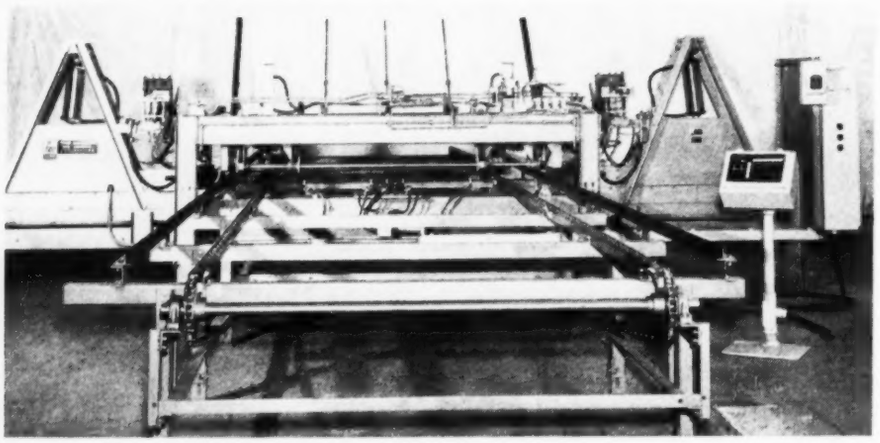
Send entry to: Georgia-Pacific, Case Histories, Dept. HWD1061H, Equitable Bldg., Portland 4, Oregon

Hardboard Case History No. 224: Showing how hardboard shields against unusual wear for the military market.

Use postpaid card. Circle No. 252

equipment and supplies

Automatic Stud Nailing Machine



An automatic Stud Nailing Machine is the latest development of the Nailing Machinery Section of FMC Corporation, Riverside, California. The machine is used to assemble prefabricated wall sections and is already in commerical operation.

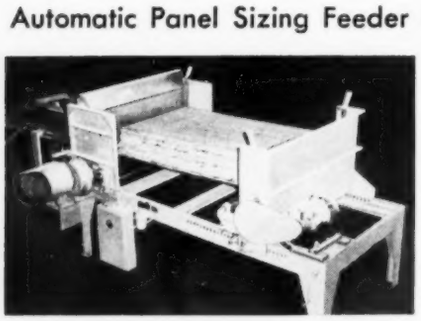
The machine features power indexing plus air actuated nail feeding, stud inserting and nail driving.

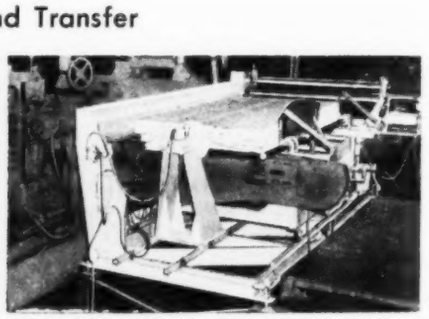
Open frame works of wall sections with sub-assemblies tacked or stapled in place are conveyed through the automatic stud nailer which inserts and nails the full length studs. The machine automatically selects a stud from a magazine, inserts it between the plates and simultaneously drives two 16-penny nails from either or both sides. The entire operation is controlled with push buttons on a conveniently located console.

Manufacturer: FMC Nailing Machinery Section, P. O. Box 552, Riverside, California.

Use postpaid card. Circle No. 9

Automatic Panel Sizing Feeder And Transfer





A Skinner Saw Feeder and an Auto Panel Transfer, both of which operate automatically, have been developed by The Cardwell Machine Company, Richmond, Virginia. They are reported to greatly increase panel sizing production with the entire operation being supervised by one man. Panels are fed from the bottom of both the feeder and the transfer units.

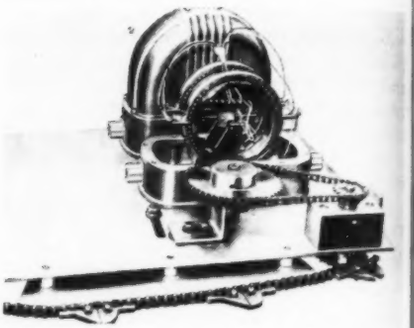
A special mechanism "cushions" and positions the panels as they are received in the hopper of the panel transfer. An air cylinder actuating two pushers gently starts the panels moving ahead of the chain dogs thus eliminating shock damage.

Automatic controls stop and start both cut-off saw feed chains, and the Skinner Saw Feeder, according to the height of the stack in the Auto Panel Transfer hopper. These controls are interlocked so that the entire sizing operation is completely automatic, safe and efficient. There is no need to synchronize feed speeds of any of the machines.

Manufacturer: The Cardwell Machine Company, 19th and Franklin Streets, Richmond, Virginia.

Use postpaid card. Circle No. 10

Electro-Mechanical Memory Timer



A new electro-mechanical memory timer has just been developed by Binks Manufacturing Company, Chicago, a leading spray finishing equipment manufacturer. The new timer is designed for application control of conveyor systems, such as spray gun control, conveyor transfer, sizing and grading, product sorting, and digital and analogue time delay.

Basic components are a drive gear; a timing ring gear with two channels similar to bearing races; 132 steel balls which take input signals, store them, and transmit output signals; a flipper gate to control ball movement and position; and micro switches which convert the ball mechanical action into an electrical signal.

Since the timer is driven by the conveyor it can stop, start and increase or decrease speed without affecting signal input. The memory timer units can be used singly, or in multiple units driven by a common drive. Thus any conveyor width can be accommodated.

Manufacturer: Binks Manufacturing Co., 3140 Carroll Ave., Chicago 12, Ill.

Use postpaid card. Circle No. 11

Tapeless Splicer Glue For Veneer Work

A powdered tapeless splicer glue for edge-gluing spliced veneers has been announced by National Casein Company, Chicago, Illinois.

The new glue, S-360, contains melamine as well as urea to provide a waterproof bond of great strength. A small amount of shell flour has also been added to impart a neutral shade to the glue line.

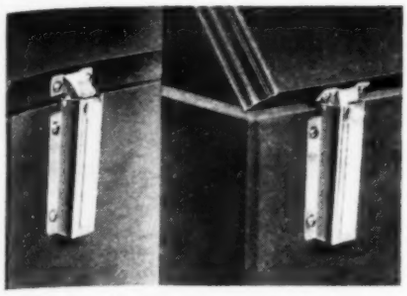
It can be used immediately after mixing with water and only a very thin coat is necessary for excellent results. Assembly can be immediate, or veneers can be stored as long as two days at 80°F after spreading and will still be bonded satisfactorily. Mixers and machines can be easily and quickly cleaned with water after using this glue.

S-360 is packaged in 100 lb. fiber drums. Storage life is at least six months if kept cool and dry.

Manufacturer: National Casein Co., 601 W. 80th Street, Chicago 20, Ill.

Use postpaid card. Circle No. 12

External, Self Balancing Lid Support



A new self-balancing combination lid support and hinge for hi-fi, radio and television cabinets has been developed by National Lock Company, Rockford, Illinois, and is being marketed through its Industrial Sales Division.

Exterior application of the lid support-hinge allows full use of the inside of the cabinet, eliminating interference with a phonograph turn-table or similar equipment. Easily installed, a tension adjustment screw provides greater flexibility, accommodating a wider range of lid sizes and weights with the same spring. Made of steel, the lid support-hinge is supplied in either brass plate lacquered or statuary bronze finishes. For lids that require only one support hinge, a companion hinge is offered which is identical to the support hinge but does not have the counterbalancing mechanism.

Manufacturer: National Lock Co., 1902 7th Street, Rockford, Illinois.

Use postpaid card. Circle No. 13

Panel Trimmer For Wood, Hardboard, and Particle Board

TAB, now the Construction Automation Division of Clary Corp., has introduced their automatic Panel Trimmer. It automatically squares, lengths and bevels panels of wood, formica, hardboard and particle board. In addition to the wide variety of materials handled, the panel trimmer is said by company officials to eliminate fraying and chipping on expensive veneers.

The material is placed on the lip of the machine and against a pre-set "length-adjuster" and a compressed air actuated surface clamp then grips the material between the vertical arm and the power plant housing. When the control button is pushed, compressed air forces the oil to raise the blade up through the material in a smooth, controlled motion.

Manufacturer: TAB, Construction Automation Division of Clary Corp., Box 562, Fort Worth, Texas.

Use postpaid card. Circle No. 14

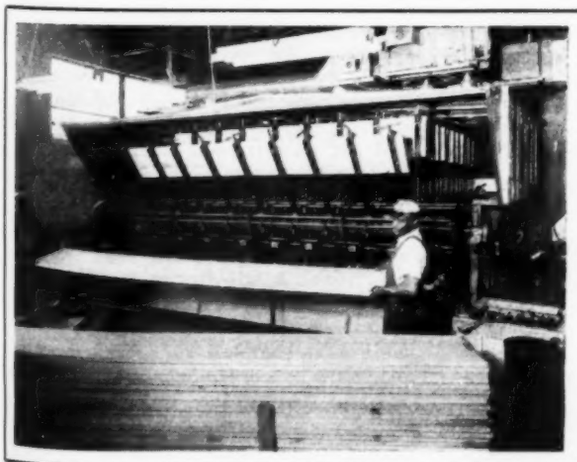
Heavy Duty Moisture Detector

A heavy-duty moisture detector which indicates moisture content from 6% to 70% has been introduced by Standard Dry Kiln Company, Inc. This unit, known as Model 100, is designed for checking both surface moisture and deep core moisture. It has wide easy-to-read dial in three separate ranges and is calibrated for accuracy to one per cent.

Weighing less than 2 lbs., the compact Model 100 is nevertheless built for heavy-duty service. It incorporates a printed circuit and transistors for high stability. The unit is in a durable carrying case complete with shoulder strap. Power is furnished by inexpensive transistor-type mercury batteries which are available at almost any drug store or photography supply shop.

Manufacturer: Standard Dry Kiln Company, Inc., Dept. B-2, P.O. Box 21008, Indianapolis, Indiana.

Use postpaid card. Circle No. 15



For Church Pews and all long, heavy work, nothing equals the BILLSTROM. No sag, no shimmy on heaviest work.

BILLSTROM INC.
ROCKFORD, ILL.

Use postpaid card. Circle No. 253

REWARD

$25 FOR A CASE HISTORY OF HARD-BOARD IN ACTION

Hardboard Case History No. 523: Demonstrating a dramatic use of hardboard in the maritime trade.

Explain "how hardboard does it better" than other materials in your plant . . . giving advantage of actual hardboard use in the manufacture of a specific product. If your case history is accepted for advertising purposes you win $25. If it involves Georgia-Pacific hardboard, you earn $50

All entries must be in by October 15, 1961.

GP
GEORGIA-PACIFIC

Send entry to: Georgia-Pacific, Case Histories, Dept. HWD1061H, Equitable Bldg., Portland 4, Oregon

Wood Preservative

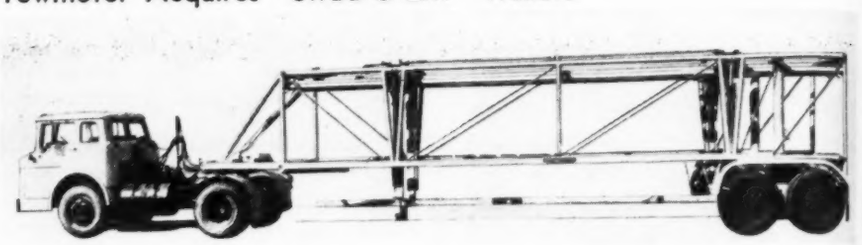
Chemical Products Division, Darworth Incorporated introduces a new active fungicide in Cuprinol No. 224 for the woodworking industry. The active fungicide in Cuprinol No. 224 is an organo-tin compound manufactured by Metal & Thermit Corp.

This new preservative is non-swelling, paintable and water repellent conforming to or exceeding National Woodwork Manufacturers' Association Specifications, and Federal Specification TT-W-572. Wood treated with Cuprinol No. 224 is afforded excellent protection against decay, termites, and other wood destroying insects. It is supplied in low cost, concentrated form easily diluted at site of use.

Manufacturer: Chemical Products Division, Darworth Inc., Simsbury, Connecticut.

Use postpaid card. Circle No. 16

Towmotor Acquires "Strad-O-Lift" Trailers



A series of Strad-O-Lift trailers have been added to the extensive line of material handling equipment offered by the Towmotor Corporation, Cleveland, Ohio. These trailers available in lengths up to 40 feet, are designed to pick up large unitized loads of all types of materials such as plywood, lumber, and particle board and transport them at highway speeds.

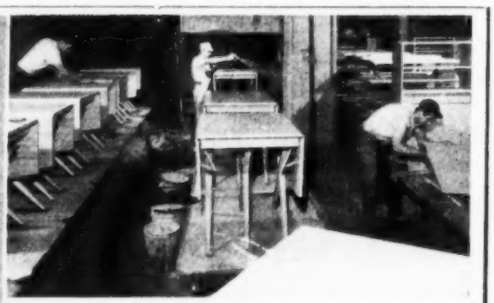
The Strad-O-Lift trailers hitch to standard truck tractors and are equipped with adjustable hydraulic lifting shoes which operate by power take-off from the tractor. A lever in the cab, opens and closes, as well as raises and lowers the shoes, which carry loads up to 20 tons. They can be fully enclosed to transport cargo requiring special handling.

Reports from users indicate loading and unloading can be accomplished in less than one minute. All models feature a built-in landing gear, ball bearing lift screw, heavy duty drive gear and spring loaded binders.

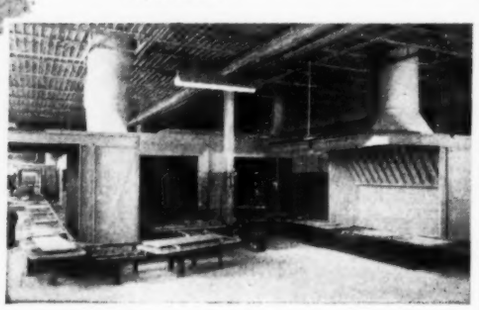
Manufacturer: Towmotor Corp., 16100 Euclid Ave., Cleveland 12, Ohio.

Use postpaid card. Circle No. 17

GROWING PAINS ?



The Craddock Furniture Company has added DeBurgh Conveyors to their line four different times to match their growing business . . . taking advantage of week ends and holiday shut down periods to extend the operations of their sanding, toning, drying and shipping departments.



While tooling for their new models, Bergsma Brothers added more DeBurgh conveyors completing the installation in just five days. These companies are typical of many manufacturers that have expedited their expanded production with Koch engineering service.

Is your production outgrowing your capacity?

It's easy to expand your

CONVEYORIZED DE BURGH FINISHING SYSTEMS

Write for Data File HW-10

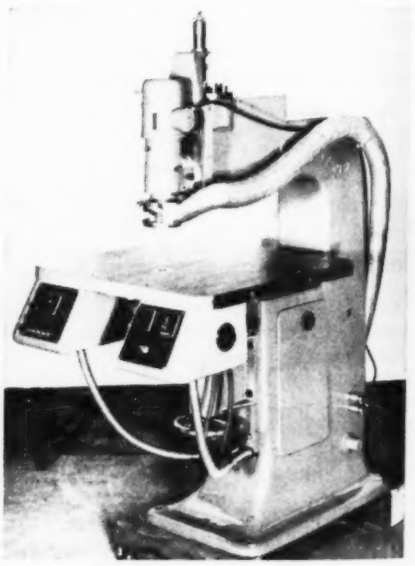
THE FLEXIBILITY of the DeBurgh system enables your plant layout to be altered or enlarged easily and quickly to meet expanded production. DeBurgh conveyors can be added by your own maintenance crew to increase the capacity of the finishing operation. Plan now to use the slack winter season to extend your production lines. Call us. A KOCH representative is near you to give you an accurate analysis and estimate Let us show you how you can achieve maximum production with minimum shut-down time at least cost.

European Representative: COLONAIR, Paris, France

GEORGE KOCH SONS, INC.
Evansville 4, Indiana

Use postpaid card. Circle No. 254

Automatic High Speed Router



The Roco automatic high speed router is being marketed by Johannes Schuback & Sohne of Hamburg, West Germany. An electro-pneumatic automatic control is provided for head travel. The head is raised and lowered by means of a reciprocating pneumatic cylinder with smooth insertion into the work piece provided by an adjustable hydraulic cylinder.

Adjustment of cutting depth is provided by means of plugs inserted into the turret head. Up to six different depths can be cut in one cycle and in any sequence desired. The forward and return travel of the head is electromagnetically controlled.

Manufacturer: Johannes Schuback & Sohne, Monkedamm 5, P. O. Box 1423, Hamburg 11, West Germany.

Use postpaid card. Circle No. 18

WOOD . . . *and* CLOVER ABRASIVES

Wood alone is problem enough, but wood nowadays is rarely used alone. Wood *and* adhesives, wood *and* plastic, wood *and* metal . . . these and many other combinations demand the greatest possible variety of Coated Abrasives.

That is the reason Clover Abrasives are a *find* for many woodworking factories and shops. The Clover representative nearly always has a choice of answers to the most stubborn *sanding* problem.

Ask your Clover Distributor for samples or for the new Clover Catalog, or write us direct. Clover's complete line is backed by fifty-odd years of abrasive experience.

Clover Manufacturing Company

Norwalk, Connecticut

Victor 7-4515

Since 1903

Makers of the famous
CLOVER Lapping and Grinding **COMPOUNDS**

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Bahnson WATER or STEAM UNIT HUMIDIFIERS

STEAMETTE

prevent warping, splitting wood faulty finishing and gluing with

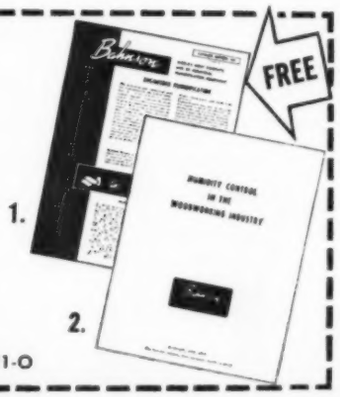
LOW-COST HUMIDITY CONTROL

- Guaranteed, self-contained water or steam units have low first cost, low operating cost.
- Automatic controls.
- Easy to install; need only water or steam supply, drain, electrical connection.

GET YOUR FREE BOOKLET, CATALOG

1. Catalog details, illustrates complete line of 14 units to suit your needs, any size area.
2. Learn how you benefit with money saving answers to humidity problems in woodworking.

Simply clip coupon to letterhead and mail.



NAME_____

THE BAHNSON COMPANY
WINSTON-SALEM, N. C. W-21-O

Use postpaid card. Circle No. 256

Hardboard Case History No. 313: Dramatic example of hardboard's workability in the entertainment industry.

→REWARD

$25 FOR A CASE HISTORY OF HARD-BOARD IN ACTION

Explain, in terms of your plant operation, "how hardboard does it better" than other materials . . . giving advantages of actual hardboard use in the manufacture of a specific product. If your case history is accepted for advertising purposes you win $25. If it involves Georgia-Pacific hardboard, you earn . . .

All entries must be in by October 15, 1961.

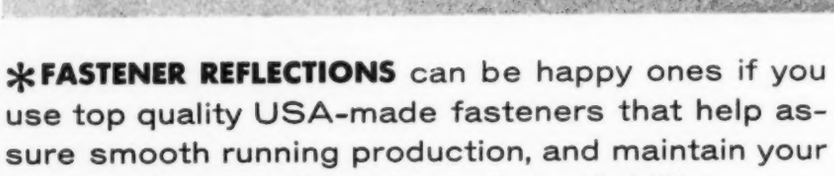
$50

GP
GEORGIA-PACIFIC

Send entry to: Georgia-Pacific, Case Histories, Dept. HWD1061H, Equitable Bldg., Portland 4, Oregon

***FASTENER REFLECTIONS** can be happy ones if you use top quality USA-made fasteners that help assure smooth running production, and maintain your company's reputation for product reliability.

If your fastener reflection could be improved, contact your service-minded Southern Screw Distributor, or write: Southern Screw Company, P. O. Box 1360, Statesville, North Carolina.



WOOD SCREWS • DOWEL SCREWS
HANGER BOLTS • DRIVE SCREWS
STOVE BOLTS • SPEAKER SCREWS
CARRIAGE BOLTS • TAPPING SCREWS
• MACHINE SCREWS AND NUTS

Southern
SCREW COMPANY
STATESVILLE • NORTH CAROLINA

Manufacturing and Main Stock in Statesville, North Carolina
Warehouses: New York • Chicago • Dallas • Los Angeles

Use postpaid card. Circle No. 257

...around the shop

This monthly feature answers readers' questions on common shop problems. If you wish to present a problem, or desire further consideration of problems discussed here, write to the Editor.

Allowances For Undesirable Elements In Job Cycle

Q. *Can you give me a list of relaxation factors and allowances used in the Multiple Element Method as an analyzing measure for each work element of the cycle?*

A. Allowances listed are maximum based on the extreme effect of the most undesirable element in one job cycle.

Factors and Allowances:

Tension—2%—is the "think strain" prior to starting an element and/or completing the element.

Noise—2%—interference which registers mental or physical disturbance against the normal "hear level" in the work area.

Dust—4%—free elements in air causing physical discomfort to worker in the area.

Temperature—5%—heat above 75°F. or cold below 65°F., and

Humidity, above or below 55%, separately or in combination, which causes physical discomfort to worker in area.

Abnormal Strain—3%—any strain causing exertion beyond normal effort but does not include "reaching."

Walking—5%—free walking without load or strain without due consideration given to relaxation.

Carry Loads—3%—physical effort after lifting or receiving load over minimum distance of 5 feet, using weight difference—male—75 lbs., female 30 lbs. and allowing 1% relaxation for each 25 lbs. or part thereof carried.

Eye Strain—5%—exertion beyond normal visual demand expended to produce at normal, with due consideration given to lighting.

Class of Motions—5%—determined by use of body digits involved, with the more digits used the more energy power required, to accumulate an increasing amount of fatigue, i.e., fingers—1%, fingers and hand—2%, fingers, hand and wrists—3%, fingers, hand, wrist and elbow—4%, fingers, hand, wrist, elbow and shoulder—5%.

Reaching—confined to use of arms and legs, with arms extended beyond a 45-degree angle to the body in normal movement, or legs extended so that equilibrium balance is changed from normal range.

Lifting—3%—physical movement required to move weight from an inactive to active state, with due consideration of method of lift.

Time of Cycle—2%—element or short cycle of elements of highly repetitive relation and rhythm can be defeating factors of fatigue.

Interrupted Motions—3%—element composed of short and jerky motions, interrupted motion or series of motions accumulates fatigue.

Sitting—2%—work which requires more than 50% of worker's time sitting should have this factor applied to each element requiring same.

Standing—2%—same category as "sitting."

Veneer Impregnation For Densified Wood

Q. *We have been experimenting with densified wood prepared from veneers impregnated with phenolic resin and compressing in a hot press. The 1/16" veneers are impregnated by immersion in an open tank with a 30% solids resin solution for 36 hours at atmospheric pressure. Following a short drying period, the veneers are laid up and pressed. We do not seem to be getting the impregnation we expected. What are we doing wrong?*

A. It would appear that yours is an error of omission rather than commission. It is customary to add a step to the process you describe, after the immersion treatment but before pressing, namely conditioning to allow complete diffusion of the resin into the cell walls of the veneer. This may be done by dead piling the veneers under a waterproof cover, such as a tarpaulin, or in a room or chamber where humidity can be held within a range of 80 to 100% and the temperature at normal room temperature (70° to 75°F.) The time required for diffusion of the resin normally ranges from 1 to 3 days. The treatment is required to achieve maximum dimensional stability.

Uses For Quercetin

Q. *What is Quercetin, the material which is reported to be obtained as a by-product from Douglas Fir?*

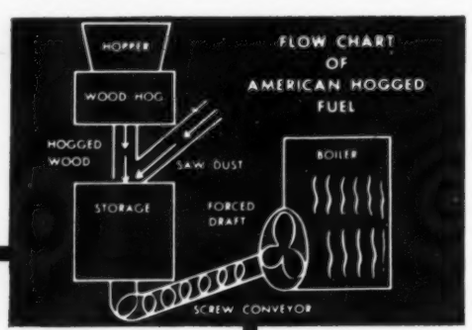
A. Quercetin is a bright yellow colored chemical that is derived from Douglas Fir bark rather than the wood. It is used to protect rubber, plastics, animal and vegetable oils, feeds and similar substances from deteriorating or spoiling.

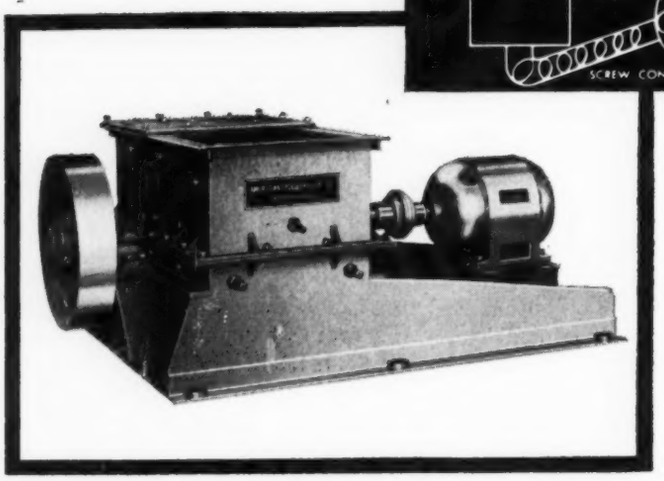
Pennsylvania Hardwood Supply

Q. *Due to adverse labor conditions, we are considering moving our furniture plant operation to some other location in the Northeast. A major stockholder is exerting considerable pressure to have us select Pennsylvania, emphasizing the good supply of furniture hardwood species available there. Can you tell us what species are available?*

A. The Federal Reserve Bank of Philadelphia reports that forests still occupy more than half the State's area. Principal hardwood species reported available in good supply include: Beech, Birch, Cherry, Hickory, Oak and Maple. Oak and Hickory are found in about two-thirds of the forest acreage and the other species are reported with good stands in northern areas adjacent to New York and New Jersey. Some Walnut is also found in the State and is reported to be increasing in spread and growth.

BLUEPRINT
for TURNING WOOD WASTE
to PROFIT





The American Wood Hog easily fits into the fuel picture to turn wood scrap into efficient heat. Whether you fire automatically or hand-feed, the swing hammer wood hog reduces wood scrap and chips into just the right size for free-burning fuel—less smoke... less ash... more heat per pound. American Wood Hogs are available in a wide range of sizes to fit your operation.

Write for Bulletin H-60. It shows how plants are cutting fuel costs and eliminating a waste problem at the same time.

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Back Pressure In Veneer Dryer

Q. *We have a problem of back pressure building up in our veneer dryer, due to failure of steam traps to function properly. How can we correct this condition?*

A. Another mill reporting similar trouble with a veneer dryer which operating 24 hours per day during peak production periods claims to have solved their problem. They did this by installing a pump return system in which the steam traps are replaced by a condensate return pump powered by two 5 h.p. motors. The system returns steam to the boiler with a maximum drop in temperature of about 15 degrees and is said to have eliminated back pressure in the veneer dryer.

Minimum Lay-Up Crew

Q. *We produce mostly 5-ply plywood laid up in a sequence of back, crossband, core, crossband and face, with the grain of the crossbands placed at right angles to the grain of the face and back veneers. According to my observations, laying up of this plywood involves 6 moves, maximum, and could be done with 5 moves when only crossbands are passed through the spreader rolls to coat both sides at the same time. What is the minimum crew used for this operation?*

A. A minimum crew usually consists of the spreader operator and two layup men at the outfeed end of the machine, or three men. The operator's operations must be synchronized with those of the offbearing lay-up crew for maximum production. Operating under normal conditions and laying up 5-ply assemblies, the production potential of this 3-man crew is about 1,200 square feet per hour.

If it is required to handle crossbanding in narrow widths, a 4-man crew is usually more effective. Crossbanding is handled by an offbearer and the other two layup men handle the other veneer components. It is customary to feed the crossbands through the glue spreader across the width of the rolls to permit easier handling by the offbearer.

Preventing Stray Heat Or Humidity

Q. *A recent check of finishing troubles at our plant showed the principal cause to be straying heat or humidity in our finish-drying ovens which serve our conveyorized finishing operations. These ovens are set to operate in temperature ranges of 120-130°F. and relative humidity of 30-35%. What can we do to prevent this?*

A. Your supplier can usually advise proper corrective measures for controlling straying heat or humidity in the ovens. However, various conditions can prevail from time to time to cause this to happen again. It is most important to know when this occurs to prevent continuing damage to finished pieces. In many conveyorized finishing systems the ovens are equipped with automatic signals, usually thermostatically controlled alarms and signal lights, which squawk loudly or show a flashing red light when either temperature or humidity in the oven strays more than 5% off from the preset heat or humidity.

Multi-Story Automatic Furniture Handling

Q. *Ours is a four-story plant in which furniture parts are cut, machined and assembled progressively up through the building to finishing operations on the top floor. Finished pieces are then delivered to the first floor for packing and shipping. Our freight elevator is too slow to handle the volume of finished goods and the chutes installed between floors require excessive manpower for transfer and safety purposes. Can you suggest a solution which will permit us to utilize the maximum capacity of our finishing conveyor?*

A. A report received from a conveyor manufacturer describes the installation of a fast-moving small elevator operated in a furniture plant as an integral part of conveyorized operations to connect an upper floor finishing department with a lower (ground) floor packing and shipping department. Its vertical ascent and descent is controlled by a geared-head motor and automatic brakes actuated by a system of limit switches. The elevator, itself, mounts a section of roll conveyor installed at a slight angle to permit furniture pieces to be rolled on or off by gravity.

The elevator begins operation on the top floor at the end of the rubbing and polishing conveyor line where it depresses a stop on the offbearing conveyor to roll 2 units onto the roll platform. A brake holds the following unit on the conveyor. When the furniture is rolled onto the elevator platform, the units trip switches in the platform which function to drop the elevator down to the lower floor. At this level, a stop on the elevator platform is depressed and the units are discharged onto the packing and shipping conveyor. The movement of these units trips a switch on this conveyor to return the empty elevator to the upper floor for another load to repeat the cycle.

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UP TO 60% LONGER

Tests Show High-Speed Steel Dramatically Increases Bit Life

Rugged production-line testing, month after month, continues to prove that Forest City tools made with High-Speed Steel have the toughness and stamina required for longer life . . . under the most exacting operating conditions. Prove it for yourself. High-Speed Steel is available on all Forest City tools with the prefix 'x' on the catalog number.

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Noticel ground marginal relief to eliminate burning.

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Respirator Protection

Q. *We have provided all of our spray operators with commercial respirators for protection against solvent vapors, etc. They complain that the masks do not efficiently remove the solvent vapors and other objectionable material. What is the best type of respirator to use at the spray booth?*

A. The major function of a respirator in this application is to filter out solvent vapors. Tests have shown that many respirators equipped with cotton, fabric or paper filters do not remove solvent vapors as well as those having additional equipment in the form of a canister or cartridges of activated charcoal. These will usually remove all solvent vapors until the charcoal becomes saturated. Cartridges may have to be changed every few days but standard canisters supplied with commercial respirators often last for weeks.

. . . for time and money saving production of

- VENEER
- PLYWOOD
- HARDBOARD
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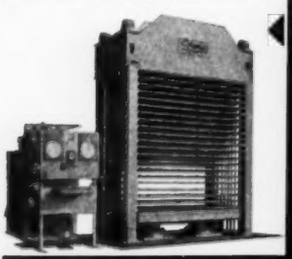

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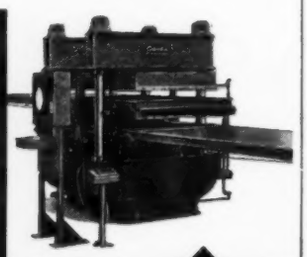
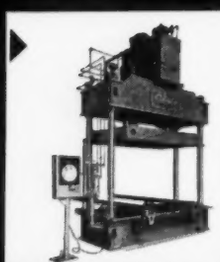
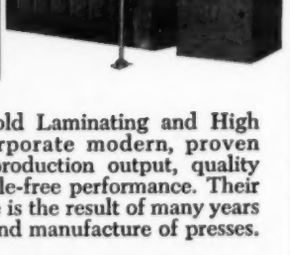


COLD LAMINATING PRESSES . . . proved for low-cost operation. Available in a complete range of sizes and types; upstroke and downstroke models; pressures to 200 psi. Convertible to high frequency operation. Request Bulletin HP-200.



SHUTTLE PRESSES . . . designed and pioneered by Columbia to utilize labor to the fullest extent. Handlers discharge and reload one caul while load on other is under compression in the press . . . no lost time. Request Bulletin HP-400.

HIGH FREQUENCY PRESSES . . . double duty: cold laminating or with high frequency heating for fast production of large or small lots with low-cost, shop-made forms for better curved laminated panels. Request Bulletin HP-300.



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Columbia Hot Plate, Cold Laminating and High Frequency Presses incorporate modern, proven features which assure production output, quality and efficiency with trouble-free performance. Their industry-wide acceptance is the result of many years of experience in design and manufacture of presses.

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Dibutyl Phthalate Reduces Lacquer Blushing

Q. *We are having trouble with lacquer blushing during periods of high humidity. A finisher from a nearby plant told our spray operator that this can be prevented by using Dibutyl Phthalate. What is this and what does it do?*

A. Dibutyl Phthalate is commonly used as a lacquer retarder to reduce blushing. Actually it is a plasticizer which slows down drying time and gives the finish film better elasticity. Lacquer treated with this retarder has been sprayed under humidity conditions up to 90% without excessive blushing of the lacquer.

Calculating Glue Setting Time

Q. *Can you advise the factors used to calculate glue setting time?*

A. Calculation of glue setting time is based upon knowledge of the relationship of setting time to temperature for a particular resin/catalyst combination, and rate of increase of temperature with time and starting temperature. Since small units of time are required it is also necessary to split the heating period into these small units.

For example, with an average glue line temperature of 130°F. the glue is completely set in 10 minutes and in one minute the glue is 10% set. It is common practice to use a unit of time which gives approximately 10°F. temperature rise. The quicker the temperature rises, the shorter is the time interval used.

Stain Causing Forces

Q. *To settle an argument between our finishing foreman and myself, will you please describe the forces which cause stain to enter and be held in the wood?*

A. Forces which cause stain to enter wood are absorption, adsorption and capillary attraction. Absorption constitutes the action of drawing in or soaking up, as water is taken up by a sponge. Adsorption is the process in which adhesion causes particles of a dissolved substance

to collect and cling to the outer surface of a solid. Capillary attraction is the action resulting from molecular forces which raise or depress a liquid when it is in contact with surrounding walls of small openings or between solid bodies, and depends for its action upon cohesion, relative force of the attraction exerted between the molecules of a liquid for each other.

Forces which operate to hold stain in the wood are adhesion, surface tension and cohesion. Adhesion is the attraction exerted between molecules of the solid and the liquid. Surface tension is a type of cohesion confined to the surface layer of the liquid—one molecule in depth. Cohesion forces in a liquid possess a degree of attraction sufficiently strong to prevent separation of the molecules but not enough to produce the rigidity of the solid state.

Band Resaw Tensioning

Q. *I have not had very good success in tensioning our 6-inch, 19-gage band resaw to hold it on the flat band wheels. Will you advise as to the amount and location of tension required in this band?*

A. This type of band saw is usually given as much tension as it will take and still lie flat on the leveling block. A safe circle of tension would be about a 30-foot circle. Calculation of the proper amount of strain by width and thickness of the band resaw involves multiplying the width of the band in inches by its thickness in thousandths and then multiplying the product by 8. Thus, the amount of strain for this 6-inch, 19 gage band resaw would be calculated as 6x042 = 252x8 = 2016 lbs. strain.

Tension for this band resaw should not be closer than ¾-inch to the tooth edge or ½-inch to the back edge. Tensioning any closer will have a tendency to stiffen the saw. If the saw is very hard, best results may be obtained with a light tension about 2 inches from the front edge and ¾-inch to 1 inch from the back edge. If proper treatment is applied, the band resaw should appear to be tensioned from edge to edge when inspected under a tension level.

Pitched Roof Sprinkler Installation

Q. *Our new building has a pitched roof instead of a flat roof used on other buildings. Our local contractor claims sprinkler systems installed under pitched roofs have special requirements. Is this true?*

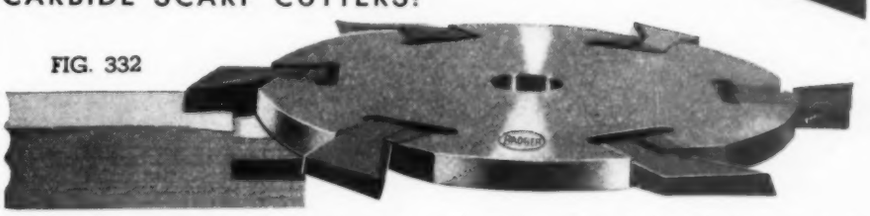
A. An authority in this field advises that where a plant sprinkler system is installed under a pitched roof having a pitch of more than 1 foot in 3 and branch lines run parallel to the peak, it is required that one line of sprinklers be located in the peak of the roof or a line of sprinklers be located on each side down from the peak a distance of not more than one-half the distance between the branch lines.

If branch lines are run up the slopes, end sprinklers should be located down from the peak not more than one-half the allowable distance between sprinklers on the branch line. It is usually recommended that deflectors of the highest sprinklers be not more than 3 feet vertically below the peak. In sawtooth roofs end sprinklers on branch lines should not be over 3 feet from the peak of the sawtooth.

Improve the Quality

OF YOUR CHECK RAIL SASH PRODUCTION—USE BADGER CARBIDE SCARF CUTTERS!

FIG. 332



So often making or losing a sale depends on little things — little things like whether or not there is a fillet or burr left by the check rail sanding operation on the stiles of check rail sash. If there is an annoying fillet, it must be removed by the carpenter to make a smoothly operating window. Why not end this problem by cutting a chamfer prior to sanding with BADGER CARBIDE Scarfing Cutters?

While machining a chamfer to avoid making a fillet is nothing new in the industry, the short cutter life with high speed steel has often made the operation impractical for high production. Badger Engineers have developed a CARBIDE TIPPED Cutter to machine this chamfer with excellent life as it successfully combats the burning tendency in such a light cut.

The Badger Chamfering Head is mounted on the cope spindle of a tenoner and accomplishes the light scarfing cut at the same time the stiles are slotted. The scarfing cut is just deep enough so the stiles will clean up in the final sanding operation. The Badger "L" Type Groover Disc with carbide tipped scarfing cutters shown can be furnished to operate on any standard single or double end tenoner. The same head is used for chamfering both top and bottom stiles. The diameter of the chamfering or scarfing cutter is usually made 1½" greater than the diameter of the slotting cutter, making, of course, a ¾" chamfer on the end of the stile.

Remember, little things make the difference —upgrade your check rail sash by removing the fillet for the carpenter—using BADGER high production tooling!

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INDUSTRY NOTES

"Sell up with Walnut" is the theme of a new promotional program being introduced to architects, woodwork manufacturers and other wood users by the American Walnut Manufacturers' Association. In the photo above, Richard D. Behm, marketing specialist for AWMA, is seen giving a preview of the program to three Walnut mill representatives. They are, left to right: Robert N. Foot, C. B. Stem, Inc., New Albany, Ind., Eugene Mersberger, Boehm-Madison Lumber Company, Milwaukee, Wis., and John J. Manley, Midwest Walnut Company, Council Bluffs, Iowa.

Hodges Asks Aid Of Association Executives In Trade Expansion

Secretary of Commerce Luther H. Hodges announced today that he is enlisting the aid of more than 800 trade association executives to expand United States exports by focusing attention on specific commodities.

Secretary Hodges said: "In the past year much has been done to develop a new interest in exports. The efforts of the Department's National Export Expansion Committee, which includes heads of leading national business organizations, and the 33 Regional Export Expansion Committees have been most successful in stimulating manufacturers who have never before seriously considered marketing abroad.

"In fiscal 1961 our exports reached a record value of $19.9 billion—a level 10 percent higher than that of fiscal 1960. Yet only a small percentage of our manufacturers benefited from this business. The time has come when we must arouse interest among the large majority who are not now regularly engaged in foreign trade by directing attention to opportunities for export of specific commodities. This can best be done, we have decided, by enlisting manufacturing industry associations which have specific commodity interests."

The Secretary said he was offering the facilities of the Department to executives of these associations to help them set up and carry out export promotion activities. In a letter to executives of over 800 Trade Associations, Secretary Hodges called attention to the increasing opportunities for exports of U. S. goods and services.

New Flakeboard Produced By Collins Pine

"Collins Flakeboard" will be the trade name of a new flakeboard to be produced at the newly completed $2,000,000 plant at Chester, California. The Collins Pine Company, one of the nation's oldest lumber firms will begin production of their new product in October.

Elmer R. Goudy, general manager of the company, said that exclusive use of selected Sierra softwoods will give the new flakeboard exceptional machineability and ultrasmooth faces and edges. The recently developed machinery used by Collins will produce a board with outstanding uniformity. Around-the-clock quality checks will ensure an unvarying standard of high quality. It will be made in thicknesses of from ¼ inch to 1¼ inches and in sheet sizes up to 5 ft by 10 ft.

Seven years of market research and product study and over a year of testing in the Collins laboratory in Chester have preceded the flakeboard designed especially for use by manufacturers of furniture, cabinets, and similar products.

Sell Up With Walnut— Theme Of New Program

A comprehensive program based on the theme, "Sell up with Walnut," was presented to representatives of wood using industries at a sales symposium sponsored recently by the American Walnut Manufacturers' Association at the Furniture Mart in Chicago. Donald H. Gott, secretary-manager of the Walnut group was in charge of the affair.

Those in attendance were told:

1. Walnut supplies are adequate for all domestic needs.

2. The 30 year seed planting program has been highly successful and the future Walnut supply will be plentiful.

3. Despite its position as a prestige product, Walnut has experienced only minor price fluctuations over the past four decades.

Tuttle New President Of Diehl Machine

Charles W. Tuttle

The G. M. Diehl Machine Works, Inc., Wabash, Indiana, has announced the appointment of Charles W. Tuttle as president. He succeeds John A. Collinge who resigned as president of both Diehl and the Indiana-MacKay Foundry Corp., Muncie. Collinge will continue as director and advisor, but reside in Scottsdale, Arizona.

Tuttle has served Diehl as executive vice president since June, 1958, and was previously vice president and general manager of Indiana-MacKay Foundry Corporation.

1961 National Safety Congress Wood Products Section Program

The Wood Products Section has announced a preliminary program for its part in the 1961 National Safety Congress and Exposition, Chicago, Illinois. The meetings for this section will be held in the Francis I Room, Pick-Congress Hotel from Monday, October 16 through Thursday, October 19. The general chairman is A. F. Reinwart, T. H. Mastin & Co., St. Louis and the program chairman is W. E. Huie, The Crossett Co., Crossett, Arkansas. (Note: All sessions are scheduled as afternoon meetings.)

Monday, October 16

2:00–Opening Remarks
2:05–Report of Nominating Committee
2:10–Election of 1961-62 Officers
2:15–"My Brother's Keeper"
3:05–"We Are All In This Together"
Wood Products Smoker–$2 per person
5:00–Buckingham Room, Pick-Congress

Tuesday, October 17

2:00–"Supervisory Training"
3:00–"The Success Of Our Safety Program"
3:30–"A Safer Operation Through Mechanization"
4:00–General Discussion

Wednesday, October 18

2:00–Logging Safety–Symposium
Skidding, Loading & Trucking. Illustrated
In the–(a) West (b) South (c) Northeast
2:50–"How Management And Labor Can Improve Safety"
3:30–"Forest Fire Control"
4:00–General Discussion

Thursday, October 19

12:30–Joint Luncheon With Pulp and Paper Section
(Hilton Hotel, Williford Room–Parlor A) Presentation of Fritz and Scott Awards
"The Human Side of Accident Prevention" by Chester Lauck, executive assistant, Continental Oil Co., Houston, Texas.
Joint Session With Pulp and Paper Section
Pick-Congress Hotel, Francis I Room
2:00–Pulpwood Logging–Existing Conditions–Safety Needs (slides & commentary)
2:30–Discussion
2:45–"The Future of Two Way Radio in Logging Safety"
3:15–Discussion
3:30–Mechanization Can Reduce Accidents in Logging (film and commentary)
4:00–Discussion

Evans Acquires Aberdeen Plywood

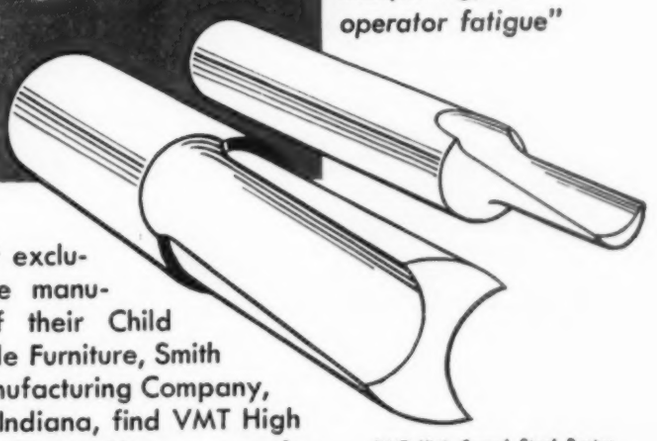
In one of the most significant moves in the plywood industry, stockholders of Evans Products Company, Plymouth, Michigan, at a special meeting, approved a new plan for the acquisition of Aberdeen Plywood and Veneers, Inc., of Aberdeen, Washington. This will make Evans the third largest integrated plywood producer in the U. S. in addition to its other diversified activities.

"The acquisition will be another step in our program of growth and development in plywood and related building products," said Edward S. Evans, president, Evans Products. "It is a major step toward a stronger, more fully integrated plywood operation taking timber from the forest to the plant, to the warehouse, to the dealer." Evans now owns or controls cutting rights on approximately 3.3 billion bd. ft. of timber.

Aberdeen operates an extensive distribution system through 19 strategically located warehouses. It operates two plants whose principal products are plywood specialties, which traditionally are not subject to such wide price fluctuations as are the standard plywood items. The company is the largest producer of marine grade plywood on the Pacific Coast, and the largest producer of medium density overlay plywood in the United States.

A diversified company, Evans is a major producer of plywood, hardboard, and related wood products, such as building panels and office partitions.

SMITH CABINET finds VMT HIGH SPEED STEEL ROUTER BITS assure *"smooth cutting with no pull, greater endurance, less down time for sharpening, less operator fatigue"*



Used almost exclusively in the manufacturing of their Child Craft Juvenile Furniture, Smith Cabinet Manufacturing Company, Inc., Salem, Indiana, find VMT High Speed Steel Router Bits are superior for grooving and routing operations in all woods, plywood and masonite panel stock.

VMT High Speed Steel Router Bits are milled with a throat and heel clearance that makes the cutter cut freely without much force . . . a savings in breakage of bits . . . a better productive cutter.

Why not give VMT High Speed Router Bits a trial run in your plant?

Virginia MACHINE TOOL CO.
BASSETT, VIRGINIA
Precision Made Tools For The Woodworking Industry—Standard or Milled To Pattern
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WHAT'S YOUR WOOD PROBLEM?

Having trouble with *late delivery* of wood parts?

At Gamble Brothers we work to keep shipping promises two ways: by having *adequate materials and facilities,* and by *properly scheduling* their use.

Of the three million board feet of lumber (all standard thicknesses, dozens of species) in our inventory, more than a million feet are kiln-dried and ready for use at any time. Your wood parts order goes into production without delay.

We've made a science of *proper allocation of machine work* and *control of detail* in order to keep 50 and more shipping promises each day. Too, we get a big boost from the all-direction truck and rail transportation available from our central location.

We're not perfect — but we like to consider our plant an extension of your own, and go *all-out* to help you make *your* delivery dates.

Send for FREE booklet Illustrating GAMBLE services

This 28-page booklet describes Gamble facilities and services in detail. Includes many photographs of unusual products designed, tested and perfected by Gamble Brothers. Write for your copy today! Gamble Brothers, Inc., 4615 Allmond Avenue, Louisville 9, Ky.

GAMBLE BROTHERS
Incorporated
Louisville 9, Kentucky
If the problem involves WOOD —GAMBLE can help!

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DeVilbiss In Mobile Trade Fair

A special display featuring DeVilbiss products has been prepared for the mobile trade fair to be conducted in world ports by the Isbrandtsen Steamship Line, which serves Toledo. The display, along with that of other manufacturers, will be taken by an Isbrandtsen ship to a number of overseas ports for exhibition either in the port area, on U. S. property in that country, or other suitable site.

First stop will be Beirut, Lebanon, where the display will remain until picked up by their next vessel and transported to another port of call. Arrangements have been made for showings at Alexandria, Egypt; Jeddah, Saudi Arabia; Port Sudan, Africa; Karachi, Pakistan; Bombay, India; Singapore, Malaya; Hong Kong, China; Keelung, Formosa, and Pusan, Korea, in addition to Beirut.

The DeVilbiss display features a remote cup unit and an airless spray unit, two items considered to have the broadest application among its line of equipment.

BRI 1961 Conference Features Wood Construction Details

Much needed information on mechanical fasteners for wood construction will be presented as part of 1961 Fall Conference of the Building Research Institute. The conference will take place at the Mayflower Hotel, Washington, D.C., November 28 to 30.

An all day session, Mechanical Fasteners for Wood will take place

IMPROVES Dry Process Boards

BAUER
SPECIFIC GRAVITY
SEPARATOR

Through a unique combination of mechanical and pneumatic action, this Bauer unit separates dry materials by specific gravity and specific surface. In the production of particle board, hard board, flake board, molded particle board, etc., it offers these typical advantages:

- Improves surface appearance by controlling size of particles used
- Increases suitability of board for application of laminants
- Reduces rejects
- Efficiently separates fines to be used for surface coating
- Helps conserve resin on certain type boards
- Removes tramp metal, rocks, etc.
- Two sizes are available—42" and 72" diameter

For complete information, contact THE BAUER BROS. CO., Springfield, Ohio.

Bauer

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on November 29. The program will present information on shear plates, mechanical fasteners for wood diaphragms, trussed rafters and glue-nailed construction under the chairmanship of Jack Godley, Gregory Industries Inc., Lorain, Ohio.

Many other subjects of interest dealing with the building industry will be presented. For complete information and advanced registration it is suggested that non-members write the Building Research Institute, 2101 Constitution Ave., Washington, D.C.

Binks Forms Company To Serve European Market

Burke B. Roche

The Binks Manufacturing Company, Chicago, Illinois, has formed a new company to market its products in the European common market, which includes the countries of France, West Germany, Italy, Belgium, Holland and Luxembourg. The newly formed Binks International S. A. will have its headquarters at 31-44 Boulevard Du Midi, Brussels 1, Belgium according to the announcement made by Binks president, Burke B. Roche. The new company already has a commercial and technical staff. Assistant manager is Etienne Peeters.

Roche explained that, "Binks International was created to strengthen the company's position in Europe, and to promote actively the Binks product line. Present plans call for a gradual build-up of manufacturing facilities. The company will also warehouse Binks products to supply distributors already established in Europe. In addition, we plan to add more distributors in countries constituting the common market, as well as Switzerland."

Binks is a major designer and manufacturer of spray finishing equipment and cooling towers for industrial and commercial air conditioning systems.

CUT YOUR CUTTING COSTS!

You mount them overhead, parallel to the line of the blades. Turn them on and a brilliant light pattern floods the working area. Taut wires, stretched below the light frame, cast clear, crisp marking shadows to project the paths of the blades. The operator aligns the work piece—promptly and precisely—to make the cut without waste.

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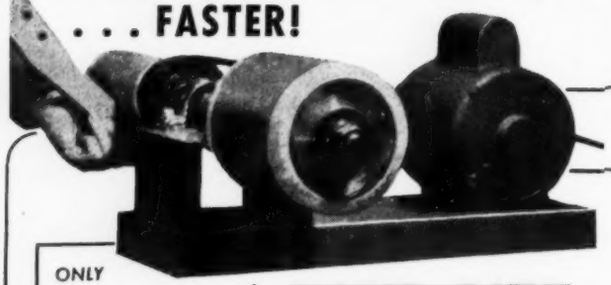

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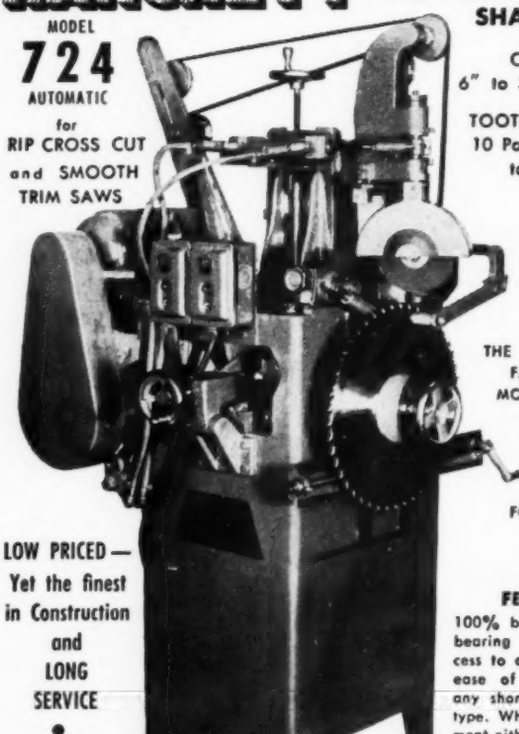

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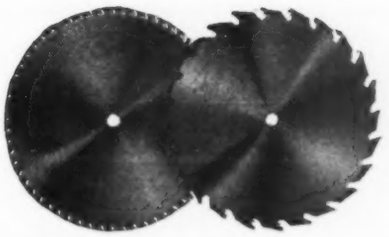

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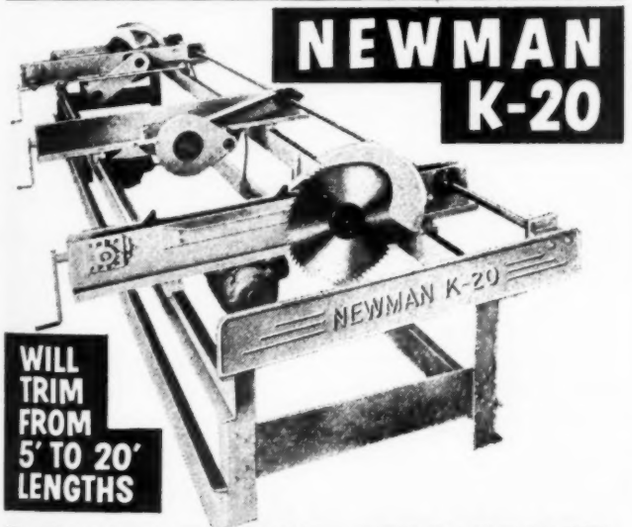

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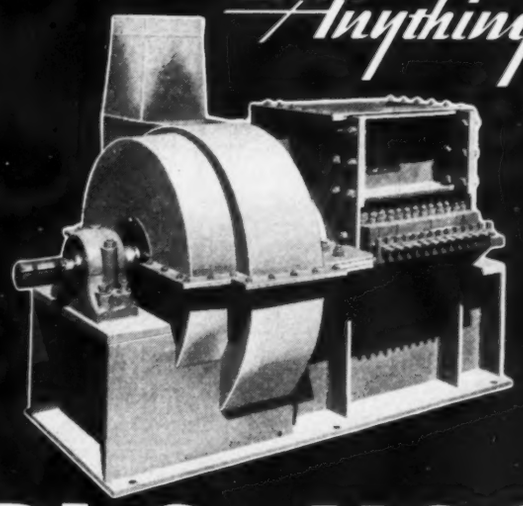

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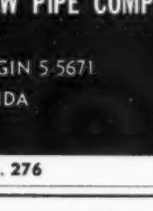

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Porter No 200SVM single spindle, b.b.
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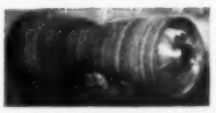

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The two postpaid *action cards,* inserted ahead of the back cover, are to help you obtain information about products advertised plus the new equipment and free literature described in this issue. This information may be obtained by circling the number on the postpaid *action cards,* which corresponds to the number appearing below each advertisement, new product announcement or free literature item. Before sending the card, please check to see that you have included your name and address:

STOP *Shrinkage - Checking - Swelling - Warping*

NELSONIZE to STABILIZE!

NELSONITE CHEMICAL CO. - 776 Leonard St., N. E. - Grand Rapids 5, Mich.

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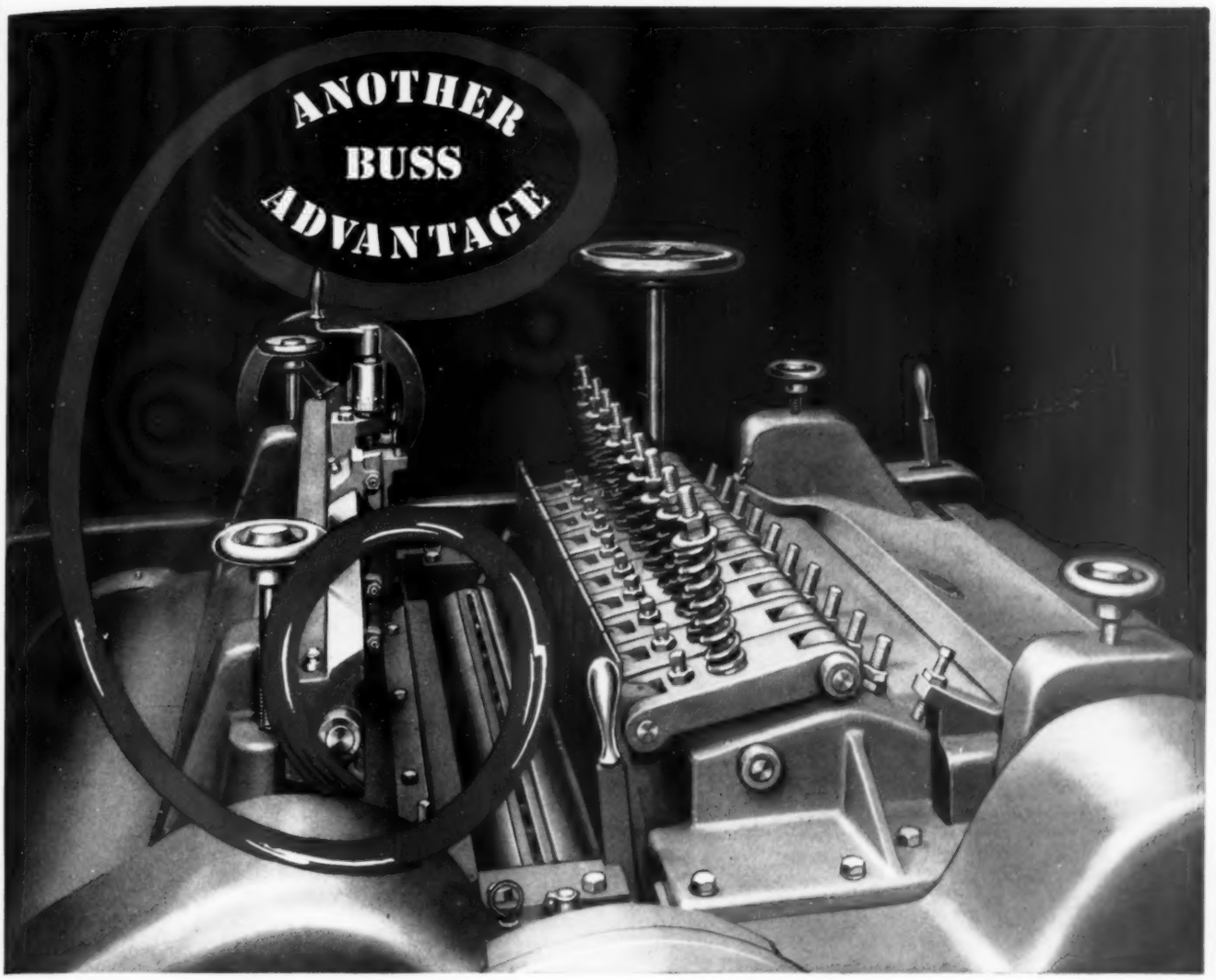
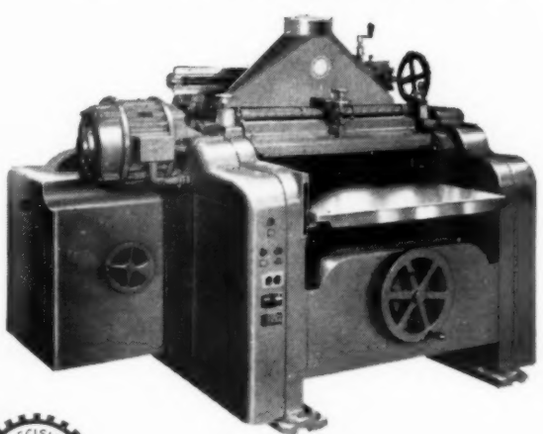


PATENTED SHEARING BAR PROTECTS CUTTERHEAD AND PRESSURE BAR



Structural superiority — the built-in profit margin you get with Buss planers. Example? The Buss patented shearing bar — a heavy steel plate, machined to a knife edge, extending the entire length of the cutterhead and bolted above the pressure bar. This shearing bar breaks up loose knots; prevents them from jamming between cutterhead and pressure bar and damaging these parts. Results? Higher quality uniform planing, and "no shaving printing." Why not put Buss advantages to work for you? Write for complete information.

PRECISION BUSS PLANERS

PLANER SPECIALISTS SINCE 1862

BUSS MACHINE WORKS, INC.

A Subsidiary of Greenlee Bros. & Co.

234 EIGHTH STREET, HOLLAND, MICHIGAN

WOODWORKING MACHINERY MANUFACTURERS' ASSOCIATION WMMA

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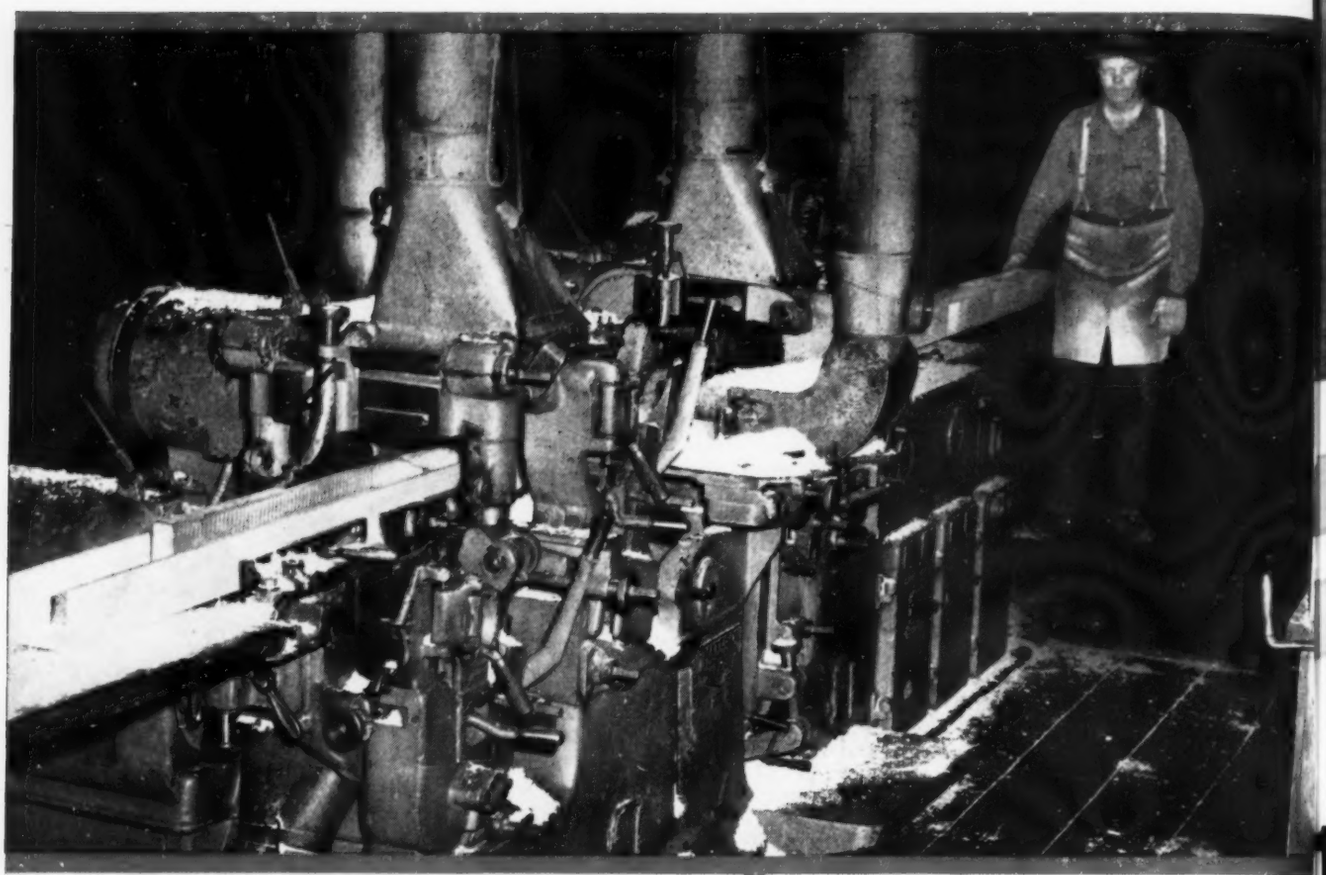
No downtime in 12 years of low-maintenance operation of Mattison No. 229 moulder



More than 12 years of steady operation . . . heavy cuts, 16 ft to 40 ft long . . . continuous accuracy on 4″ x 6″ gutter—Mattison's No. 229 moulder matches this capacity with minimum maintenance time and costs for Eclipse Lumber Company, Everett, Wash.

"Our Mattison No. 229—8 in. moulder still gives us top accuracy after shaping 65 million bd ft or 1440 carloads of heavy green hemlock," says D. W. Butterfield, planing mill foreman. "Maintenance costs are extremely low."

Why knives on a Mattison keep on cutting:

Maximum rigidity. Even when you work wide stock and make extra-heavy cuts, Mattison's one-piece base and close-coupled cutterheads virtually eliminate vibration—assure excellent finish and low maintenance costs.

You can mould at top efficiency in hard or soft wood with Mattison's wide range of feed speeds. Easily accessible cutterheads simplify setups—keep knives cutting for "plus" production.

You'll like the accurate, smooth finishes you get on every piece you run through a Mattison moulder.

For details, phone your Mattison representative, or send coupon.

The Mattison No. 229 Moulder is made in sizes to finish 6″ x 4″; 8″ x 4″; 10″ x 4″. Cutterhead speeds available at 4800 rpm or higher.

MATTISON
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ROCKFORD ILL. U.S.A.

MATTISON
WOODWORKING MACHINERY
"Built better . . . to produce better quality"

MATTISON MACHINE WORKS
545 Blackhawk Park Avenue, Rockford, Illinois
Gentlemen:
Please send free literature describing your No. 229 Electric Moulder.

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